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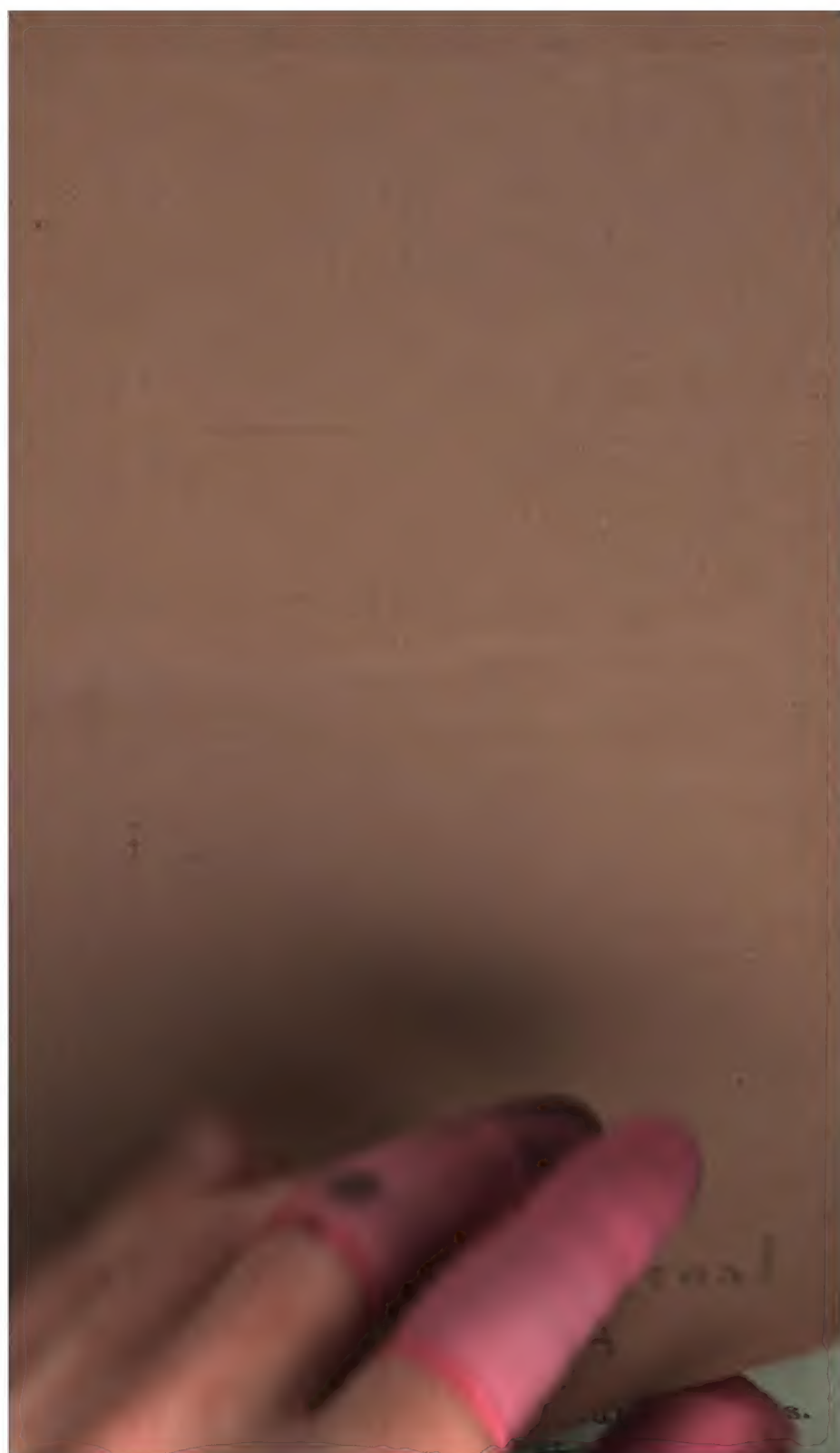
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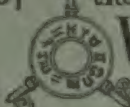
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They were approved by the members of the Continental Congress, at Carpenter's Hall, Philadelphia,
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The Resolves to which the immortal patriot here first gave utterance, and the heroic deeds of
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"Posterity will acknowledge that virtue which preserved them free and happy."

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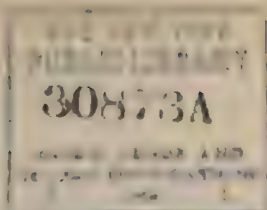
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A PREFACE TO THE STUDY OF ANGLO-SAXON HISTORY.*

The message which Edward Hine has crossed the Atlantic to bring unto Manasseh (or the United States) is one momentous far beyond all tidings that have ever come to man in modern days. It involves questions so grand and so far reaching—questions which run back throughout all written history, and which, sweeping on beside the stream of prophecy, map out the very future of the human race—that to consider them in brief is well nigh but in vain. This message is primarily one of *peace* between two brother nations. It assures us of an ever growing concord between the land of Ephraim (Great Britain) and our own "Great People." It looks towards the moulding, not remotely, of every spear and sword into the pruning-hooks and plows of a world recovered from strife, and whose nations shall have accepted blessings which are to be theirs in Abraham our father. It is idle to predict a limit to the influence for good which an acknowledged acceptance of this truth will secure to

* Written as a preface to Edward Hine's forthcoming work, addressed to the American people, "One Hundred and Forty-seven Identifications of England and America with Ephraim and Manasseh." *To Joseph was the birthright. The earth and the fullness thereof.*

England and America alone. Nor may we ever set a boundary to the far wider influence which an uncontested fraternity in Joseph (the son of Jacob, son of Isaac, son of Abraham) must exert in turn upon the nations round about us.

The nations of the earth must see this truth in time, and in its light must "flow unto the Lord" in willingness. But were the truth by others scorned, and yet by them, themselves, by brothers John and Johnathan, believed, the greatness of the Saxon stock would dominate the world more irresistibly than even now; with only faint acknowledgment, it reaches on towards its certain destiny.

Edward Hine is undoubtedly the father of that division of this most absorbing topic, which resulted in distinguishing, in the English-speaking peoples *alone*, the true body of "Lost Israel." It was he who, in particular, was allowed to clear the originally crude Teutonic Identity of John Wilson of all its fatal objections, and to make a truth of what before had only been a theory. Since its first promulgation, Mr. Hine has publicly advocated the facts of the identity before at least five million people in the British Isles. The printed editions of his numerous works have reached unprecedented numbers, and the prospect is that, far from diminishing, the demand for them is vastly on the increase. Born of the truths presented in these volumes, a whole literature has been created, and, flowing into it, moulded at last into a form with real existence, the whole of Anglo-Saxon history seems destined to be drawn.

The confusion of the original conception as it clothed itself in Wilson's mind was but a natural one. Impressed with the grandeur of the evidence which deep study was formulating before him, and knowing that the ancestors of Britain had certainly come across the channel from its eastern and Teutonic shores, he concluded that of this stock they surely were, and that therefore, in their latter day inheritance, the whole Teutonic growth should have a part.

It was not clear to him that just as Israel of old, in leaving Egypt, journeyed years among the nations of the wilderness, and here and there left impress on them, so the Khumric emigration might have been across the "northern wilderness"

among its people, leading them, resting with them here and there, then leaving them, without a grain of wheat remaining, in their onward course to western empire.

It was through Europe, as they trended "westward" towards "the north country"—"the isles" wherein they were to "recover their strength"—that the exiled "house of Ephraim," or "All Israel," *i. e.*, "The Lost Tribes," or the Cumbri of modern historians, made their way. In this great emigration they strewed their course with the "signs" of their pilgrimage, "setting up waymarks" here and there, and even left their customs impressed upon the peoples through whom they passed, and whom, accompanying them like the stragglers and camp-followers of a vast invasion they left behind, settled here or there along the journey, while they—the dominant people, the leaders of the movement—impelled by destiny, moved on beyond in spite of failing strength, and reached at last their "little sanctuary."

There is no grander theme in history than the story of this struggle of the Anglo-Saxons westward. The very streams of Europe mark their resting places, and in the root of their names (*dan*) recalls the sacred stream, the Jordan, from whose banks, so far away, as exiles, they set out. But even were these people not indeed "Lost Israel," yet, nevertheless, their history is wonderful beyond the story of all other nations. "Terrible from their beginnings, and hitherto" they certainly were led by the God of Abraham, and led differently than other nations have been, and towards a grander destiny. And they parallel the promises to Israel so perfectly, from their very origin in Media, whither Israel was departed, to their resting place upon the British Isles, as tribe by tribe they gathered there, that to find another people who shall counterpart both Israel and Saxon is a fruitless effort for the student of history. In this expanding theme the true philosophy of history is spread before us. The reflection from its panoramic slides, beneath the glare of the identity, assumes a significance so new and startling, so marvelous, so thrilling, that all the links of universal history become but one harmonious sequence in a chain of evidence which is anchored in conviction. Beneath its light the pages of

prophecy read as the story of to-day. God's *word*, so sure and fixed, becomes the very record of our own great race. In dignity this topic has no compeer, and to him who lends himself a willing and unbiased student of its claims, it will afford a subject of unending scope.

In that its evidence is cumulative lies its truth, and though for fifteen years its advocates have challenged the production of a single fatal objection, not one of any kind has been advanced that has not easily been overthrown. The very identity of the "Jews," a people scattered among all nations, never lost, and literally fulfilling every prophecy against *them*, a people whose existence is a standing demonstration of the integrity of Jehovah, demands that *likewise*, and to the *same degree*, the Ten Tribed kingdom shall fulfill all prophecy relating unto *them*. There is no spiritualization about the *curse* that has pursued our brethren of Judah for full eighteen hundred years; the burden has been heaped upon them in its full material weight, and they are under it to-day. Not one jot nor tittle has been lifted. Why, therefore, should we longer seek to find in *Israel's* promises merely spiritual meanings, and sever from "the birthright," which was *Joseph's*, and which, more than all, was meant by Jacob to be *temporal*, its very substance? To the kingdom of Judah was promised "the Lawgiver," and, though His own received Him not, He came, fulfilling all that prophets had predicted of Him. So unto the kingdom of Israel must pertain the blessings of the birthright, and be as literally realized, wherever Ephraim and Manasseh are to-day, as are the bitter burdens that make Judah mourn. Whatever may have been involved in the blessings originally given unto Abraham, and repeated by Jehovah to Isaac and to Jacob, it is certain that they were understood and expected to last, expanding constantly to the very end of time. To the patriarchs themselves they were explicitly conveyed under two widely separated and contrasted heads—spiritual and temporal. They were blessings not alone to them, but to them, as instruments and means, were far more broadly promised unto all mankind. Truly the ways of the Almighty are past finding out, and a retrospection over what has thus far transpired in the history of a creature driven

out of Eden, but with the promise of return at last, only goes to establish more conclusively the unsearchableness of Him whose ways lie in the deep.

When the time arrived for Jacob, the last of the three patriarchs, to be gathered to his fathers, he was moved of God to assign these two classes of blessings severally, as follows: Unto Judah he gave the spiritual blessings, for of him, the Lawgiver, Christ, was to come—*did* come, say all "Christians," and will *yet* come, say all "Jews." But to Joseph, the beloved son, gave Jacob all the purely temporal blessings that pertained unto "the birthright." The dying and far-seeing patriarch was, however, even more explicit in this assignment of these temporal blessings, as a brief *résumé* of the circumstances of its transmission will clearly establish.

As the time drew near for his departure from the earth, he exacted from his son, then vice-regent of all Egypt, a promise that though he was to die in Goshen he should not be buried there, but should find his last resting place with his fathers, in the Land of Promise. This Joseph swore, and returned to the administration of Pharaoh's affairs. But the end drew near, and when it was told to Joseph "Behold, thy father is sick," he took with him his two sons, Manasseh and Ephraim, and hastened back. Now it was told to Jacob that his son was coming. So "Israel"—as the angel had named him—strengthened himself and sat upon the bed, and then was enacted that most significant ceremony which, in the light of subsequent events, is seen to have ushered in the means towards the full fruition of the will of the Almighty. The patriarch perceived that it was not enough to set aside his eldest sons, Reuben and Simeon, and to give "the birthright" to Joseph in general terms, no matter how pregnant they might be with import. So to quiet forever among his descendents any dispute as to its nature and degree, he then and there *adopted*, before blessing them, the two half-Egyptian boys of him who was beloved. "And now thy two sons, Ephraim and Manasseh, which were born unto thee in the land of Egypt, before I came unto thee in the land of Egypt, *are mine; as Reuben and Simeon shall they be mine.*"

Though separated from his brethren, it was most grandly for

their good that Joseph had gone down into the land of Egypt long before them. It saved them from the famine, and by its outcome the very dreams that originally led his brethren to banish him had already been, in type, at least, fulfilled. There was then in Egypt none who did not bow to Joseph, as second in that mighty realm he rode the chariot of Pharaoh.

Now it will be remembered that at this remarkable scene of blessing, the dying patriarch conveyed his prophetic gifts in a manner that was somewhat contrary to custom and a surprise and disappointment unto Joseph. For though Manasseh was the eldest, and had purposely been brought near by Joseph "towards Israel's right hand," while Ephraim had been withdrawn towards his grandfather's left, yet Jacob stretched out his right hand and laid it upon Ephraim's head, who was the younger, and his left hand upon Manasseh's, "guiding his hand *wittingly*," say the Scriptures, "for Manasseh was the first born." It will also be noticed that in this *crossing* of his hands, by which "he set Ephraim before Manasseh," the patriarch made the latter the *thirteenth* tribe of a now and henceforth ever to be *thirteen-tribed* Israel. For Joseph's withdrawal from the twelve left eleven, and his reacceptance in the persons of his two sons made the whole number *thirteen*, while the precedence given to Ephraim in the adoption left Manasseh last or *thirteenth* in the order of his tribal birth.

Now, the blessing was in this wise: "God, before whom my fathers Abraham and Isaac did walk, the God which fed me all my life long unto this day, the Angel which redeemed me from all evil, *bless the lads*; and let my name be named on them, and the name of my fathers Abraham and Isaac; and let them grow in the midst of the earth as fishes do increase." The ceremony had proceeded thus far without interruption when Joseph noticed that his father had laid the right hand upon Ephraim's head, and as it displeased him he essayed to lift his father's hand and remove it to Manasseh's head, saying: "Not so my father, for this is the first-born; put thy right hand upon his head." But his father *refused* (and so pointed a refusal, at the termination of a long life of special favors showered upon Joseph, is deeply significant) and said: "I know it, my son, I

know it; he also shall become a *people*, and he also shall be *great*; but truly his younger brother shall be greater than he, and his seed shall become a multitude of nations." And thus he blessed them that day, saying: "In thee shall Israel bless, saying, God make thee as Ephraim and as Manasseh."

It was just after the foregoing scene that Jacob called unto all his sons and said, "Gather yourselves together that I may tell you that which shall befall you *in the last days*." It is with Joseph and with Judah, as the particular representatives of the two kingdoms into which, at the death of Solomon, the several tribes were divided, that we have most directly now to deal. Like as *Judah* became the general term by which the kingdom set up at Jerusalem by Rehoboam became known in later history, so *Ephraim*, now made the elder son of Joseph by the blessing, became a general one for that of the Ten-Tribed Kingdom founded across the Jordan by Jeroboam. Throughout the Scriptures, from the day of Solomon's death, this distinction is so explicitly maintained that to confuse it is to wander hopelessly from the paths that lead these peoples down to latter or to *present* times.

Gather yourselves together, and hear, ye sons of Jacob;
And hearken unto Israel your father.

* * * * *

Judah, thou art he whom thy brethren shall praise;

Thy hand shall be in the neck of thine enemies;

Thy father's children shall bow down before thee.

Judah is a lion's whelp—From the prey, my son, thou art gone up:

He stoopeth down, he croucheth as a lion—and as an old lion; who shall rouse him up?

The scepter shall not depart from *Judah*, nor a lawgiver from between his feet,

Until Shiloh come—And unto him shall be the gathering of the people be.

Binding his foal unto the vine—And his ass's colt unto the choice vine.

He washed his garments in wine,—And his clothes in the blood of grapes:

His eyes shall be red with wine,—And his teeth white with milk.

* * * * *

Joseph is a fruitful bough,—Even a fruitful bough by a well;

Whose branches run over the wall.

The archers have sorely grieved him—and shot at him and hated him:

But his bow abode in strength,—And the arms of his hands were made strong

By the hands of the mighty God of Jacob;—(From thence is the shepherd, the stone of Israel:)

Even by the God of thy father, who shall help thee;

And by the Almighty, who shall bless thee— With blessings of heaven above,

Blessings of the deep that lieth under,—Blessings of the breasts and of the womb:

The blessings of thy father have prevailed above the blessings of my progenitors

Unto the utmost bound of the everlasting hills:—They shall be on the head of *Joseph*,
And on the crown of the head of him that was separate from his brethren.

* * * * *

Two hundred and thirty-eight years after the utterance of this prophecy, Israel's greatest prophet—Moses—about to bid farewell to the people he had led from Egypt, repeats these blessings, and, when the heads of the people and the tribes of Israel were gathered together, says of *Joseph*:

Blessed of the Lord be his land—for the precious things of heaven,
For the dew and for the deep that croucheth beneath,
And for the precious fruits brought forth by the sun,
And for the precious things put forth by the moon,
And for the chief things of the ancient mountains,
And for the precious things of the lasting hills,
And for the precious things of the earth, and the fullness thereof,
And for the good-will of him that dwelt in the bush,
Let the blessings come upon the head of *Joseph*,
And upon the top of the head of him that was separated from his brethren.
His glory is like the firstling of his bullock—and his horns are like the horns of unicorns.
With them he shall push the people—together to the ends of the earth.
And they are the ten thousands of Ephraim—And they are the ten thousands of Manasseh.

* * * * *

These blessings are explained in no uncertain words. They sweep onward throughout all the course of history, and in their comprehensive scope lead up to what, as Jacob said, should be the circumstances surrounding the posterity of Judah and of Joseph at the latter days.

It is in these latter days that Moses and all of his successors of the school of prophets, have looked for the return of Judah unto Ephraim—the two tribes to the ten—and for their united return, immediately thereafter, to their land recovered from the sword. In the words of Moses, thus re-echoed down the stream of prophecy by all of his successors, we have the mention of this gathering as follows:

And this is the blessing of *Judah*; and he said, Fear, Lord, the voice of *Judah*—and bring him unto his people. Let his hands be sufficient for him—and be thou an help to him from his enemies.

* * * * *

The sin of Judah consisted in mistaking the character of the blessings entailed by the promise, that when Shiloh came, and did come to rule in might beyond

looked for purely *temporal* blessings, and when in a meek and lowly Saviour they found only *spiritual* ones, they crucified him, and went out among all nations desolate. But blindness, too, has fallen upon Israel in part, for here we find the circumstances just reversed. Upon the sons of Joseph, ruling as chief among the nations of the modern world, we find the *temporal* blessings literally as foretold, poured out and running over, and yet we find them blind to the rock whence they are hewn, proclaiming themselves Gentiles everywhere, and as only in possession of the purely *spiritual* gifts that come of Christianity alone. The Anglo-Saxon thinks that he is only Israel by spirit and by grace, and that his might and prominence among the nations of the earth are his from other reasons than inheritance from Jacob. Equally with Judah has the house of Israel thus misconceived their blessings. But the day of their awakening has come. An unprecedented feeling of unrest has fallen upon all mankind. Expectancy is more intense than ever in the history of man. All nations feel it, and if the sure word of God is an abiding rock, then unto it must Christians turn for knowledge of these latter days, and, having identified not only Judah, but Israel, speed their feet towards the Land of Promise.

The *identity* of the Anglo-Saxons of the British Empire, and of the United States, with Ephraim and Manasseh and the tribes their fellows, is a claim so startling to us, who have thought ourselves but Gentiles, that our first impulse is to reject it wholly. "But whoso is wise will ponder these things, and they shall understand the loving-kindness of the Lord." The proofs are such as cannot be gainsaid; they have only to be examined to become as fruitful as the promises themselves. If this message, then, from Ephraim is true, how grand the mission of the stranger now among us to "the great people" of Manasseh. What crowding thoughts awaken at the fact of this unheard of news! It is the most momentous question of the day, for on it hangs a future pregnant with stupendous political movements.

Under the guidance of the providence of the Almighty, the great drama of man is drawing towards its closing scene. With varied interest, intensified by our necessary participation in its

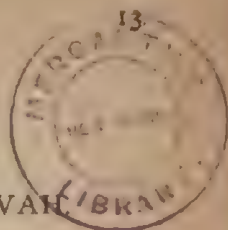
several acts, we have studied, in all ages, the grand problem of human existence, and concluded, as its scenes unfolded, now one thing, now another, until the very intensity of the mystery has wrapped the attention of the listening world.

The curtain rises upon the first scene of its closing act, and what a surprise awaits the audience. As the thought speeds backward over former passages in the drama, the past at last is understood, and with the dawning light the present, too, assumes proportions far beyond cyclopean. The hero is at last disclosed. The secret of his many phased identity is given out. At once we recognize him as he stands before us, not only in his long familiar character as the Anglo-Saxon race, but the intellect of humanity is staggered at the crowding possibilities involved in his recognition, also, as the dim shadow that in every eye has hitherto so mystified the plot. This mighty race of modern times, this giant of the story, is now revealed as *identical* with *Israel* itself—with that Ten-Tribed Kingdom "lost" amid the mountains of the Medes so many centuries ago!

A silence falls upon the audience as, hushed in its intensity, it waits to hear the hero speak. What may we not expect beneath this strange, unlooked for recognition of an *origin* we least anticipated?

The curtain has not fully rolled away; the huge proportions of the stage require a large one; so, as it rises, we will study what we see before us, for the play will soon begin again and sweep us onwards with no time for retrospection.

C. A. L. TOTTEN, U. S. Army.



THE ALTAR AND PILLAR TO JEHOVAH.

VIII.

The first four steps in our exposition of Isaiah xxii, 15-25—Shebna's office, his treasury, what he had there, and who he had there—lead us to the consideration of the fifth:

(5) *What Shebna had done there.* He had hewed him out a sepulcher there, probably "on high," in imitation of the treasurer with whom he is compared. Had he followed what was customary in the conversion of a treasury-stronghold into a monumental tomb, he would have hewn out his sepulcher in the rock foundation on which his treasury stood. The usual subterranean sepulcher seems referred to in the figure under which Ezekiel predicts the downfall of Tyre: "When I shall bring thee down with them that descend into the pit, with the people of old time, and shall set thee in the low parts of the earth, in places desolate of old, with them that go down into the pit." (xxvi: 20.) Its association with a treasury is seen in the reason of Job's wish that he had died in infancy: "For then had I been at rest, with kings and counselors of the earth, which built desolate places for themselves; or with princes that had gold, who filled their houses with silver." (iii: 13-15.) Add to this the expression in Isaiah lix: 10, "we are in desolate places as dead men," and we see clearly that the "desolate places" which "kings and counselors of the earth built for themselves" in Job's time, and in which "princes who had gold, and who filled their houses with silver," slept their last long sleep, were monumental tombs, converted into such from their primary use of treasury-strongholds. It should be observed also that "kings and counselors" are kings and treasurers, the king's treasurer or ruler over his house being his privy counselor. It was therefore by no means an unprecedented ambition in Shebna, that of desiring to be buried in the "desolate place" wherein he would have served in the capacity

of treasurer while it was yet a treasury. His sin appears to have consisted in presuming upon the honor of a superterrestrial sepulcher, like that of the treasurer whose act of "hewing him out a sepulcher on high" was celebrated in sacred song, without an imitation of those humanitarian virtues and achievements which justified the anticipation of such an honor in that distinguished exemplar. Shebna had no *proprietary* right in the honor to which he aspired.

(6) *The logical connection between the possessions and the deed.* This is the point of crucial interest: by what right the king's treasurer could hew out for himself a sepulcher on high in the king's treasury. It was, if I mistake not, by virtue of treasures there of his own more valuable than the king's, and by virtue of an image and likeness of himself there so true to nature as by no reasonable contingency to be taken for anything else than the original. The reason of such means to such preferment lay in their proof of divine inspiration, and in the divine right of God's prophets over the divine right of kings. Treasures of infinite wisdom and goodness, symbolized in precious stones and appropriate forms of silver and gold, as reflex embodiments of their manifestation in man and the material universe, constituted the sacred mysteries of that grand masonic structure, the Great Pyramid, and of similar structures of the house of David, independently of the mere financial wealth with which they were associated; and if the man who was inspired of the divine Spirit to represent them in such forms was the treasurer himself, as in the case of Joseph, they belonged to him rather than to the king. This, with a divinely inspired image of himself, as I will endeavor to show by-and-by, entitled him to burial in his Great Treasury-Stronghold, rather than under it, on the principle that "where his treasures were his heart was also;" but Shebna could lay claim to no such honor.

(7) *The person with whom Shebna is compared.* Who it was, though abundantly presupposed, has not yet been proved to the extent possible. Hebrew Joseph was to Pharaoh-Shofa, or at least to Pharaoh somebody, what Hebrew Shebna was to King Hezekiah, so far as the office of treasurer was concerned. In answer to Joseph's advice, "Let Pharaoh look out a man dis-

creet and wise, and set him over the land of Egypt," etc., Pharaoh replied, "Forasmuch as God hath showed thee all this, there is none so discreet and wise as thou art: thou shalt be over my house, and according to thy word shall all my people be ruled: only in the throne will I be greater than thou." We see by the marginal reading, in connection with the Scripture parallels already adduced, that a more correct rendering of the above would be, "Thou shalt be over my treasury, and according to thy word shall all my people be armed." If Joseph was to be "set over all the land of Egypt" for the accomplishment of the stupendous work before him, it was necessary, first of all, that he should be put in complete control of the means in men and money, as well as possessed of the wisdom and discretion, commensurate with the end. The people were required to be armed according to the word of Joseph, either with implements of masonry or implements of war, because his treasury was a stronghold, requiring to be defended by military power, and possibly to be replaced by a larger, as the most concentrated and comprehensive means to the defence of the Pharaoh and his kingdom.

Of the words translated "be ruled," Lange says, "'be armed,' as some read it; and then it bespeaks him general of the forces." According to the same authority, the words to Joseph, "I am Pharaoh, and without thee shall no man lift up hand or foot in all the land of Egypt," mean, "without thee shall no man lift up his hand to hold a weapon, or his foot to ride a horse." We read also that in place of the name "Zaphnath-paaneah," the Septuagint gives us "*Psotom-phaneh*," which "signifies, as Jerome observes, and as the Coptic or old Egyptian language shows, *Saviour of the world*." It reminds us of Isaiah's statement of the humanitarian object of the altar and pillar to Jehovah in the midst of the land of Egypt, that the Egyptians "shall cry unto Jehovah because of the oppressors, and he shall send them a saviour, and a great one, and he shall deliver them." It also confirms my opinion that Joseph is the Bible's most perfect type of the Saviour of mankind. In these respects the relation of Joseph to Shebna is that of contrast rather than of comparison. Godfrey Higgins, in his "Anaca-

lypsis," says that "to Joseph in Egypt" was given the name "Scalit," signifying "wise man," as well as the name "Salus," signifying "a saviour." This "wise man, who built his house on a rock," is the person with whom Shebna is compared, not because of likeness in character, but because of likeness in hewing him out a sepulcher on high in "the house" over which the king had set him for the care and management of the royal finances.

(8) *His Sepulcher on High.* Judging from the sarcophagus in the king's chamber of the Great Pyramid, I take this chamber to be the "sepulcher on high." To justify this conclusion it is incumbent on me to show, in the first place, that "the granite coffer" was truly a coffin; and, in the second place, that it was the "coffin" referred to in the statement: "So Joseph died, being an hundred and ten years old; and they embalmed him, and he was put in a coffin in Egypt." (Gen. l: 26.) Prof. Smyth says: "The inside dimensions of the coffer being, by our measures, (roughly) 6.5 feet long, 2.2 feet wide and almost 3 feet deep, are at least long enough and broad enough for a coffin; and if rather deeper than convenient or necessary, I will not object to that, as there is now proved to be a ledge cut in the top of the thick sides of the vessel, and quite suitable for a lid. As there is a ledge, an intention at some time to put on a lid may or must be inferred; but it is still to be proved whether a lid ever was put on by the architect of the Great Pyramid, and especially for sarcophagus purposes; because, first, with a sarcophagus lid of the ordinary style and thickness fastened into that ledge, the coffer could not have passed through the closely fitting door-way of the room; it would have been several inches too high. Second, a sarcophagus lid fastened in that ledge would have betokened the accomplishment of the last rites of the dead; and they would have included, among all eastern nations, but more especially the contemporary, indigenous, profane Egyptians, the engraving of the deceased's name, titles, deeds and history on the coffer, both inside and out. But there is nothing of the kind there." ('Our Inheritance,' p. 161.)

To the first objection to the sarcophagus theory and practice

I reply, that the coffer must have been introduced into the king's chamber while this was open to the outside on the fiftieth course of masonry; because, as Professor Smyth shows elsewhere, Dr. Grant proved, by careful measurements, that the coffer could not have passed the angle between the descending and ascending passages, where the granite portcullis now blocks the way. Besides this, the coffer is too heavy to have been used for the transportation of a dead body to its last resting place; but this fact comports exactly with the language regarding the burial of Joseph: that "they embalmed him, and he was put in a coffin in Egypt." It is evident from this language and from the circumstances of the case, that he was embalmed by "his brethren," and was "put in a coffin in Egypt" by the king and the highest dignitaries of the kingdom, with rites and ceremonies significant of the honors he so richly merited. The last words in regard to him clearly imply that he was not conveyed in a coffin to a sepulcher, but was conveyed *to* a coffin, *situated* in a sepulcher, and was there put into it. The simple question therefore is: what is meant by "Egypt," the place in which the coffin was located? The "*midst* of the land of Egypt," marked by the Great Pyramid, was a definite representative of Egypt as a whole, as the peach-pit in the stone is a representative of the peach, tree and all. Moreover, it is pretty generally known that the word translated "Egypt" is "Mitzraim," and from the elements of this word, by the *gematria* (a certain recognized art of interpreting the numerical values of the Hebrew letters), Mr. J. Ralston Skinner deduces "the Rock out of the Water," which he says means the Great Pyramid. According to this rendering the last words of Genesis are: "They embalmed him, and he was put in a coffin in the Great Pyramid." This is not saying that the Great Pyramid was built by Joseph; but to the many pyramidologists who hold to the cabalistic interpretation of the name Mitzraim, the question as to what use was made of the granite sarcophagus in the king's chamber ought now to be considered settled. And surely, in the light of the implication by Moses that the body laid in the coffin in the Great Pyramid was Joseph's, Professor Smyth's second objection to the sarcophagus theory of the cof-

fer, namely: that there are on its external no hieroglyphics setting forth "the name, titles, deeds, and history" of the deceased, is no longer tenable. As well might we expect to find Egyptian hieroglyphics on the walls of the king's chamber, and on other parts of the Great Pyramid; for he of whom it was said or sung—

" He heweth him out a sepulcher on high,
And graveth a habitation for himself in a rock."

must have been the architect of the entire structure. And in view of the fact that Joseph's coffin rested on the Great Pyramid's fiftieth course of masonry, I can hardly help expressing the opinion that his prophetic interment therein was commemorated by Moses in the fiftieth year of the Hebrew calendar, "the year of jubilee," when both the people and the ground rested from their labors, awaiting the time of revival, and when "liberty was proclaimed throughout all the land, to all the inhabitants thereof, and every man returned to his possessions," signifying the rest of the body in its native dust, and the emancipation of the spirit from its earthly thrall into the free air of Heaven, to return to its rightful possessions, not of the body only, but of the whole land of Canaan, "in the resurrection," when "the Kingdom of God shall come, and when his will shall be done on earth as it is done in heaven."

Though I have cited Prof. Smyth as opposed to "the sarcophagus theory," and though his disciples, in supposed loyalty to their master, are arrayed against it with a sort of uncompromising hostility, I am inclined to believe that he leans to it quite strongly; for, quoting from 'Life and Work at the Great Pyramid,' he speaks of "the top margin" of the coffer as "cut into in a manner implying that a sarcophagus lid once fitted on, sliding into its place from the west, and fixable by three steady pins, entering from the lid into holes on the western side." ('Our Inheritance,' p. 155.) One could hardly make this statement without seeing clearly that the sarcophagus had once sat snugly against the west wall of the chamber, and had been removed from the wall by the rolling of its alternate ends upon the jasper pebble beneath it, to its present position, ere any small, loose stone was to be found within the Pyramid, in order

that the lid might be withdrawn to permit a removal of the bones, or of whatever the lid may have concealed at the bottom of the sarcophagus. Quoting further from 'Life and Work,' Prof. Smyth says, "It is inconceivable how the French academicians could have pictured the coffer, as they did, without representing anything of this ledge cut-out or of the fixing-pin holes, unless they looked upon these traces as a comparatively modern attempt to convert the original pure coffer into a sarcophagus, and which they were therefore bound to overlook in their description of the *original* vessel." (Ib., p. 156.) Here the coffer is recognized as presenting to the careful observer the alternative of believing it to have been a sarcophagus, or else believing a thing utterly incredible, namely, that the ledge and pin-holes for a lid were made since access to the coffer by El Mamoun's forced hole, for the purpose of deluding us into taking it for what it was not. Again he says: "John Taylor had suggested, but not very strongly, that the shape of the coffer was derived from the hot bath, the *calidarium*, long known in the east—a long and deep box-shape—in which a man might lie down at full length or sit up, and such a shape, he showed, had been found more convenient for a corn-holder, or large corn-measure, than a cube of the same contents. But in the presence of four thousand years or more, which the Great Pyramid now represents to man, the most solemn case of lying down is that of the tomb; and the full length, horizontal extension is as characteristic of what was ever taught in the Hebrew or Christian religion, as it was radically opposed to the wretched, bent up and shortened attitude of some miserable idolaters, and of the Parsees in India in the present day, or of the cremation methods of Hindoos, or the ancient Egyptian plan of bringing out the mummies of their ancestors and setting them *up* 'round the dinner-table at the greater family feasts. The very look of the coffer evidently does produce, in some minds, the idea of solemnly and religiously lying down extended, looking upwards, peaceful and strong in faith of a future awakening by the power of God." (Ib. p. 263.)

After reading the above, I was much touched with the following in Mrs. C. Piazzzi Smyth's memoir of John Taylor, it

seemed so like an impression of this lesson of the coffer on the good man's mind in his last moments. Of his prayers on his death-bed she writes: "Again and again he would say, 'O! let me lie down, let me lie down in the arms of Thy mercy, and when I wake may I enjoy Thy blessing continually. Grant this, O Lord, for Thy dear Son's sake. Amen.' The next night his prayer had changed; it was now, 'O! let me lie down in the arms of Thy *pity*, and *when I rise up*, may I dwell in Thy presence forever.' " And, rightly understood, this prayer of the dying Christian was not inconsistent with the idea entertained by himself and others, that the coffer in the king's chamber was the original corn-measure from which the Britains derived their "quarter," and the Israelites their "four homers." In justification of "the shape of the coffer as a capacity measure," Professor Smyth says: "We have already given a variety of reasons of a somewhat mathematical order, but have no objection now to add thereto this general verbal apology: that the shape of the coffer is to enable it, with its elemental-founded size, to typify and be most suitable to the size, shape, forces and purposes of man; not of man trying to scale the heavens by his own might, but man living in obedience to and dying in harmony with the commands of God his Creator." (Ib., p. 263.) Just such a man was he "who built his house on the rock," to whom Jesus likens "every one that cometh unto Him, and heareth His words, and doeth them." Joseph came to Jesus in the prison, heard his words during those seven years of provident abstraction from the world, and executed them openly in the forms and proportions of both his cosmic treasury and his micro-cosmic sarcophagus therein. Moreover, "all flesh is as grass, and all the glory of man is as the grain of grass: the grass withereth, and the grain thereof falleth away: but the word of the Lord endureth forever." (1 Peter, i: 24.) The compend of his word is his "name forever," recorded in his "memorial to all generations," and that by "grass" is meant the stalks of grain, is evident from Psalms cxxix: 6, 7. Therefore, least of all can we see any inconsistency with each other in the coffin and corn-measure theories of the coffer in the Great Pyramid, if we consider it to have been the coffin of the great

gatherer and dispenser of the corn of Egypt—the casket to which were entrusted the sacred remains of the treasurer who “gathered up all the money that was found in the land of Egypt and in the land of Canaan, for the corn which they bought,” and who “brought the money into Pharaoh’s house,” the house over which Pharaoh had set him, *i. e.*, the Treasury-Stronghold. The question before us is: the place of Joseph’s interment, and for the discovery of this we need to enquire: Did Joseph foresee the necessity for a new, greater and more impregnable fortress in which to bestow his treasures, and did he provide for the emergency? Or was the greater necessity in the case, in subserviency to the over-ruling motive for the erection of “an altar to Jehovah in the midst of the land of Egypt,” the necessity for employing the people during the years of famine, and during the years that would necessarily be occupied in the redemption of their horses and asses, their flocks and herds, their bodies and their lands? Moses tells us that, “as for the people,” whose bodies even Joseph bought for Pharaoh, “he removed them to cities, from one end of the borders of Egypt even to the other end thereof;” and to what cities if not to Memphis and Heliopolis, the cities of Joseph and Asenath? And for what more worthy and enduring purposes than the construction of Joseph’s great citadel and the still-existing nilometer called “Joseph’s Well?”

J. W. REDFIELD.

THE UNVEILING OF ISIS.

VIII.

The picture which forms the frontispiece of this Magazine represents the birthplace of American liberty. If the reader will turn to my paper in No. 1, Vol. 2, he will find the narrative of the circumstances that led me to this old house. I had supposed that the birth of American liberty should have occurred in the Old South Church, but found, as I have related, that the Suffolk resolves were not passed there. The first symbol of the birth of liberty occurred when the constellation of the northern crown was on the eastern horizon. I believed this constellation to be the star or sign in the east referring to the united colonies of New England, and had calculated by the position of the sign in the heavens that the time should be nine o'clock in the morning of the seventh of September, old style, or the seventeenth, new style.

When the wise men sought Jesus, saying that they had seen the star of the Messiah in the east, they supposed that Jerusalem was the birthplace, but they were informed that Christ was born in Bethlehem, which is only three hours walk from Jerusalem; and when they departed to seek Him, the star rose before them and stood over the place where the young child was. The meaning of this expression may be explained by the fact that when meridian observations are taken when the sun or star passes the meridian, it is nearly in the centre of the arc of the heavens, and, when we say that the sun is on a stand, we mean that it has ceased rising and shows nearly the exact time of the passage of the meridian. If the star or heavenly body should pass the zenith in crossing the meridian, then the standing over would be almost instantaneous. It will be remembered that the Corona Borealis was exactly vertical over Bethlehem in the year one.

It is, therefore, not without reason that I supposed that the

moment of the passage of the Corona Borealis, or of Alpheca, or of some other periodic star of that constellation, such a one as appeared in the crown in 1866, the date of the close of the great slavery war, might denote the consummation of this grand historical event—the birth of LIBER-ty. The passage occurred at four o'clock in the afternoon on the ninth day of September, 1774. The meeting began at nine o'clock in the morning, at which time the constellation was rising in the east. The birth of liberty would naturally have taken place in the Old South Church, but our forefathers were forced to meet outside of the city on account of the great number of troops occupying the neck; therefore the old house of which we give the picture in this Magazine, was the birthplace. The nativity in Bethlehem occurred when the whole world was up to be taxed, and the agitation of the ninth day of September was on account of taxation, and on the afternoon of that day the act was consummated which gave rise to or completed the birth of American liberty.

It was said by Higgins that a new mythos should arise in about latitude 45°, when corn should be ripe in September. Was not this fulfilled in our case? Dupuis gives one planisphere to show that the birth of Christ was an astronomical myth, which occurred, he says, at one A. M. of December 25, when the sun had reached its farthest southern point—and was born again. This is the season of the Roman Saturnalia—and he shows the constellation of Virgo as it is in the picture, and the Corona rising beneath it on the planisphere. "We have seen His star in the east, and have come to worship."

I had written to Dr. Seth Pancoast, of Philadelphia, with reference to my interpretation of the sign in the heavens, and he replied as follows:

The Book of Revelation is a key to the New Testament, and the books of Ezekiel are a key to the inspired books of the Old Testament. They must be understood subjectively before they can be clothed objectively. This wise precaution was taken by the ancient Kabbalists in order to preserve their sublime and heavenly wisdom from those who might abuse it. When the subjective knowledge is obtained through subjective unfoldment there will be no danger of abuse. Christ was a Kabbalist, and He merely unveiled and revealed; and St. John wrote the key that will enable anyone who understands it to throw aside the veil, and which is, Kabbalistically speaking, raising the veil of Isis. Isis is the woman clothed with the sun and standing upon the moon with twelve stars encircling her head. She represents a symbol that, if understood, would almost afford a key to unlock

the doors of the ancient sanctuary. All objective scholars have so far failed, and will continue to do so until they become subjectively enlightened.

Up to this time I had thought of Isis only as an Egyptian goddess, and I did not suppose that she had anything to do with the United States of America or with the Scriptures. For one year I endeavored to trace the connection between this subject and the picture. My first investigation showed me that the very term Isis was the Egyptian name for Virgo, and that the constellation Virgo in the Latin had the same meaning as the constellation Isis in the Egyptian; that Ariadne was a similar term, and that the Corona Borealis was Virgo's, or Isis, or Ariadne's crown.

In passing through Philadelphia I called upon Dr. Pancoast and, in the presence of Mrs. Pancoast and my brother, I narrated most of the circumstances that had occurred in my investigation up to that time in 1879.

He said then that I had the truth, but he subsequently declared that it could not be. It will be remembered that in seeking for a woman who should represent the sign in the heavens I had selected Isabella of Spain, who, in herself, represented a nation and the church. In September, after my visit to Dr. Pancoast, it suddenly struck me that the name Isabella meant beautiful Isis—Isa-bella. I searched in various books, and in Anthon I found that *Isa* bore the meaning of Isis or lady, and seeking in other works I found that *Isabella* meant also **WORSHIPER OF GOD**. Then the thought came to me "What is that which always was and is and is to be?" A worshiper of God. And embodied in this is divine wisdom. The more fully I have investigated this subject the more clearly do I see that it will bear the interpretation given. The name of the woman who sent forth Columbus should be symbolic and referable to the whole subject.

One day a stranger in the train spoke to me of a wonderful work by Godfrey Higgins, entitled 'Anacalypsis.' The author calls it "AN ATTEMPT TO DRAW ASIDE THE VEIL OF THE SAITIC ISIS." The thought had come to me, Luther is "Eleutheros," that is "Libertas," both meaning freedom, liberty. Turning to the word liber in Anacalypsis, I found that Bacchus was Liber

and that he was really the god of the Book. Luther holds an open book in his hand as the angel of the tenth chapter of Revelation. And the Boc, or Book, or Liber, and Bacchus or Boccus are synonymous. Then the thought began to grow upon me that Luther was the Bacchus of the myths. Luther's symbol was a swan, and I said it would be another link in the chain if I should find that Bacchus also was represented by a swan. Turning to Anacalypsis I found these words: "The Brahmins say that Brahma, like Jupiter, for the love of Leda, was turned into a swan. When he was about to be killed by Iswara he sang hymns and verses to her praise to pacify her. From this came the story of the musical singing of swans when they were about to die. Brahma carries a book as an emblem. This was because he was the first emanation of divine wisdom, and the wisdom contained in the Veda, or Book of Wisdom, came from him. Hence in Greece Bacchus, or Brahme, was called "Liber."

Bacchus, the god of Freedom, not of wine, but Bacchus, or Liber, the god of the Book, was traduced and ridiculed even by the seed of Noah, mixed with other races, and called the god of wine; and so Luther, having denounced the crimes of old Rome, which sold indulgences and gave only bread to the laity, gave wine also to the laity, and hence they call him, as the Pharisees called Jesus, a glutton and a winebibber.

I sought then to discover how Bacchus, the ancient, could be the same as St. Martin, the modern saint. Looking into the Book of Days I found that the eleventh of November is Bacchus' day and also St. Martin's day, and that in Europe the statues of Bacchus and St. Martin stand side by side. The eleventh of November is the old Advent day and the present Advent day of the Greek church. Luther was born close to midnight on the tenth, so that either the tenth or eleventh may be celebrated as his birthday. The month of November is called the month of the Magi. Luther was of the Magi, and his Lotus symbol proves it. One of his crests was a cross rising out of a rose. This Lotus is a Rose. The birthplace of Luther was Eisleben, and he was called the Swan of Eisleben. Godfrey Higgins says that Eis is Isis; therefore Eisleben may be rendered the "Life of Isis." And as Luther translated the Scriptures into the vernacu-

lar, he bears in his hand the Book which may be interpreted, as we will show hereafter, "The Life of Isis."

I then began to search for the symbolisms concerning Columbus. If the reader will turn to the legend that I applied to Columbus in Vol. I, No. 6, the connection will be found as I proceed. I had sent for the remarkable book, *L' Histoire de Christophe Colomb*, by Roselly de Lorgues. This book on its way fell among a hundred dead and dying at Ashtabula, and was dug out of the ruins all wet and injured; but I had it dried and rebound, and there I found my very thought. I had before placed Columbus as the real St. Christopher, for he bore Christ over the waters to the new world. The statue of the saint was known and venerated through the whole of Christendom, and Roselly de Lorgues says that after the advent of Columbus the worship of the saint ceased, for the personage whom he represented had come.

Now as Bacchus, the god of the ancients, represented St. Martin, it appeared to me that Serapis symbolized St. Christopher. Serapis was the god of navigation. He was regarded as the saviour of Egypt. It was under his temple at Alexandria that the cross was found when it was destroyed by one of the Roman emperors. He was considered by Hadrian and the Gentiles to be the peculiar god of the Christians. Clement, of Alexandria, assures us, in his *Stromatis*, that all those who entered into the temple of Serapis were obliged to wear on their persons, in a conspicuous situation, the name of I-ha-ho, or I-ha-hou, which signifies the God eternal. From this and the other proofs to be shown hereafter, I think we may fairly infer that the Egyptians were of the same religion in its fundamentals as were the Jews. Columbus always bore upon his banner the symbol now employed by the churches as the monogram of Christ, the cross and the P, and also used it with his signature. It is the very symbol found beneath the foundation of the temple of Serapis at Alexandria. This cipher is also inscribed on the staff of Isis and of Osiris. Serapis was represented in Sais as holding aloft a globe in his hand, and if we look to the east of the capitol at Washington we find the statue of Columbus bearing in his hand a similar ball or globe.

Examining the name of the place whence Columbus came, I found that he sailed from Palos, which was the Ispalis of the ancients, and the country of Tartessus or Tarshish. The meaning of the word Ispalis may be represented as the mast or staff of Isis. We have seen that the symbol of Christ was also the symbol of Isis, and as St. Christopher held in his hand the staff with which he bore Christ over the water, so Columbus bore his banner from Ispalis or Tarshish, fulfilling the prophecy, "The ships of Tarshish first shall bear thy sons from afar."

When he set out from Palos he gave the order, "Unfurl the sails in the name of Jesus Christ," thus acknowledging Him as his captain. His vessel was the Santa Maria, or Holy Isis, and he planted his staff upon the shores of the new world in the harbor of San Salvador, or Holy Saviour.

The Pillars of Hercules were said to be at Ispalis, near Gadir, or Cadiz, and here was a temple of Isis whose fires were always kept burning and whose priests constantly looked westward in longing expectation of the opening of that great sea whose waters had covered the ruins of THE LOST ATLANTIS.

In *Le Peuple Primitif*, by Frederic de Rougement, we find the following allusions to the dove, the swan and the eagle. It will be seen how appropriate is the symbol of the dove to Him who represents the God of navigation: "The dove represents the love of the Spirit of God for the earth, unformed and void, which he will vivify and organize, and this symbol responds exactly to that other construction which describes the Spirit brooding over the waters. To judge from the commentaries of the Jews upon the second verse of Genesis, the comparison of the Spirit of God to a dove brooding on its eggs must have been at all times familiar to that people."

"From the allusions to the blue dove in the myths of the Basques, it is evident that the bird of the primordial waters is signified. The Latin, the Greek and the German agree with the Basque in making the dove an aquatic bird. Columba comes from the Greek *columbao*, to swim. *Peleia*, Greek for Colombe, comes from *pleo*, to which corresponds the Latin *pluo*, to rain, and the German, to plunge in the water."

"Legend, language and mythology testify that the swan was

a demi-urgic bird in the belief of the people of the white race. In the ancient world the god of the primordial waters takes the name of the eagle. This bird has always represented a God supreme, the sovereign God who has fashioned the earth upon which he reigns."

The reference to Hercules standing with one foot upon the dragon in the work of Madame Blavatsky, "*Isis Unveiled*," suggested to me that Washington, as St. Michael, probably represented the ancient god Hercules. We read that Hercules sailed with the Argonauts in search of the golden fleece. Godfrey Higgins tells us that the "sough" meant divine wisdom and also fleece, and that the Greeks took the wrong interpretation. The work of St. Michael was to drive the dragon out of heaven, and the work of Hercules was to put down the power of the dragon, and to seek, not the golden fleece, but divine wisdom beyond the seas. The birthplace of Washington was Virginia, named in honor of Elizabeth, the antitype of Isabella—beautiful Isis. This name is synonymous with Virgo. Hence the leader who was to defend the woman, or the church, came from the State named after a woman. To this man, typified by St. Michael and Hercules, a monument has just been reared, to which all of the nations of the earth have contributed a stone. When General Lafayette sent to him the key of the Bastille by Thomas Payne, he said: "I send this key from the apostle of liberty to its patriarch and founder." Columbus, Luther and Washington represent the magi who came to assist at the birth of liberty, the three kings of the Orient. They are all typified by their birds, their signs and their mythology.

In my interview with General Garfield, early in 1879, he asked: "What do you make of the *Mayflower*?" I replied: "I do not know." I had always thought that the name of the ship should be symbolic. The ship seemed to be typified by the wings of an eagle, upon which the woman fled into the wilderness, and upon examination I found that the flagship in which John Winthrop sailed was called the *Eagle*, the name being afterwards changed to *Arabella*, in honor of a most noble and pious woman who sailed in her. And the church formed on board, of a company of worshipers, seemed a double fulfill-

ment of prophecy. The words of John Winthrop and his followers to their old mother, England: "We go to found a church in the wilderness, where we can worship God according to our consciences," have a special and marked import.

I told General Garfield all of these circumstances, and said, "some time I shall find out the meaning of the Mayflower." After he was elected President, Jesse H. Jones, a personal friend of his, came to my house, and as we stood before the picture he said: "What do you make of the Mayflower?" I replied: "General Garfield asked the same question, but I do not know." While looking at the picture the thought had often come to me: "This picture is like a flower, constantly casting off blooms, but all flowers wither and die, and this does not." Being invited one evening by some friends to speak about the picture, I said: "Since I last saw you it has opened like a flower." I said "like a lotus flower," but, at that time, I was ignorant of what the lotus was. I appealed to my friends, but they did not know. I said then: "I will investigate." I wrote at this time to Mr. Skinner, and said: "I have a thought; it is that the lotus flower is connected with the picture." In his answer he asked: "Did you know that Isis and Osiris were born in a lotus flower?" The morning Mr. Jones left this thought suddenly forced itself upon me: "Lotus flower, May flower—there must be a connection, but what proof can I find?" That morning I went to the Y. M. C. A. for the purpose of asking a question about a room. As I stood before the fire I saw for the first time a picture of the compact in the Mayflower, on the eleventh day of November, 1620. The sun is shining down the hatch of the vessel; ~~Robinson~~^x has his hand lifted up as if in exhortation or prayer, and the company is signing that wonderful agreement of which the historian says: "Humanity recovered its rights in the cabin of the Mayflower." It begins: "In the name of God, amen." My meeting with this picture more fully impressed upon me the connection between May and Lotus flowers. I examined to see if "May" could refer to Isis, and I found that the word MAY was from MAIA, and that Maia was Isis. Mayflower—Isisflower, Mayflower—Lotusflower. And here it seemed to me that the fulfillment of the

x *Brewster*

myths took place. For humanity recovered its rights in the Mayflower, or Lotusflower. The day of the signing of the compact was November 11. This was the true ancient day of advent and the advent day of the Greek Church, and it was the advent of the sons of God to a New World. It will be remembered that Isis finds Osiris between the seventeenth and nineteenth, and on the ninth the Mayflower sighted land, which is the nineteenth new style. Here we have in the Mayflower the birth of a nation concealed. It seemed like the grain of mustard seed or the leaven, for the Christianity of the Pilgrim Fathers has leavened the whole lump of this nation. Here was the mother flower of liberty, the germ from which came the full blown Lotus—Liberty—on September 9, 1774.

Of the lotus flower Maurice says: "Among the different plants which ornament our globe there is no one which has received so much honor from men as the lotus or lily, in whose consecrated bosom Brahma was born and Osiris delighted to float. This is the sublime, the hallowed symbol that eternally occurs in oriental mythology. Throughout all the northern hemisphere it was everywhere held in profound veneration; and from Savary we learn that the veneration is still continued among the modern Egyptians. It still continues to receive the respect, if not the adoration, of the Christian world, unconscious, perhaps, of the original reason of their conduct."

In the account given by Mr. Payne Knight, we read: "It is employed in every part of the northern hemisphere where symbolical religion, *improperly called idolatry*, does or did prevail. The sacred images of the Tartars, Japanese and Indians are all placed upon it."

Nimrod says: "The lotus is a well known allegory of which the expanse calyx represents the ship of the gods floating on the surface of the water, and the erect flower arising out of it the mast thereof. The ship was Isis or Magna, mater. This plant was also used in the sacred offices of the Jewish religion, and in the ornaments of the Temple of Solomon the lotus or lily is often seen."

In Anacalypsis we find: "Jesus Christ was called a Nazarite, not a Nazarene. He was a Nazarite of the City of Nazareth.

But he was something more than this; he was a renewed incarnation of divine wisdom. He was the son of Maia or Maria. He was the rose of Sharon and the lily of the valley which bloweth in the month of his mother Maia. Thus when the angel Gabriel gives the salutation to the Virgin (see hundreds of very old pictures in Italy) he always presents her with the lotus or lily. And where did this lily grow? It was in Carmel, the garden or vineyard of God, that this nazir was found at Nazareth. But nazir or natzir means a flower, and that flower the lotus or lily; and it grew in the valley of the garden of God. My reader may think this very mystical, but let him turn to the Bible and read the account of the lilies and pomegranates in the temple of Solomon, on the high priest's dress, and in the Canticles and works of Solomon. Nazareth, the town of nazir, the flower, was situated in Carmel, the vineyard or garden of God. Jesus was a flower; whence came the adoration by the Rosicrucians of the rose and cross, which rose was ras, and this ras, or knowledge or wisdom, was stolen from the garden, which was also crucified as He literally is, on the red cornelian, the emblem of the Rosicrucians or Rosé-cruxians—a rose on a cross. This crucified flower plant was also liber, a book, a letter or tree, or Bacchus or IHS. One of Luther's crests was a cross rising out of a rose, precisely similar, another proof of the identity of Bacchus or Liber and Luther. "This IHS. was logos, letters, LTR=650. The God was also called rose or ras, because he was R=200, O=70, Z=90=360. Or rose 365; RS=RST=600; the rose of the water or water rosea, as it is called to this day, but this rose of Sharon, this logos, this word, was called in Arabic and Chaldean *werta* and word, the same as our word. Thus it was generative principle and lingua, a word or words, language. How curiously the system is interwoven! The red rose of the Rosicrucians, when it can be done, is surrounded with a glory and placed on a Calvary. This is the naurutz, natzir, or rose of Isuren, of Tamul, or Sharon, or the water rose, the lily-padma, pema, lotus, crucified for the salvation of man."

"Sul, the sun, would form lus or lux, lusus. From this the lotus or flower of the sun, the manifestation of wisdom or love,

came to be called flower of lus or lys—the rose of the water, ice, Isis, Isuren, Sharon."

The pyramid was called by the ancients AOR or light, and the thought had come to me that it might be compared to a lotus flower. Some time after this I received the work of Mr. Robert Ballard, of Australia, 'The Solution of the Pyramid Problem,' and under the head, "The pentalpha, or five-pointed star, the geometric symbol of the Great Pyramid," he says: "A plane geometric star, or a solid geometric pyramid, may be likened to the corolla of a flower, each separate side representing a petal. With its petals open and exposed to view the flower appears in all its glorious beauty; but when closed many of its beauties are hidden. The botanist seeks to view it flat or open in its geometric symmetry, and also closed, as a bud, or in repose—yet judges and appreciates the one state from the other. In the same manner must we deal with the five-pointed star and also with the Pyramid of Cheops.

In dealing with so quaint a subject I may be excused, in passing, for the quaint conceit of likening the interior galleries and chambers of this Pyramid to the interior whorl of a flower, stamens and pistil, mysterious and incomprehensible."

If the reader will study the mythology of *the* Pyramid, he will find that it was said to be erected in honor of Isis; and the symbol of a triangle, with the eye in it on the reverse of our seal, is a symbol of Isis and Osiris, or, in other words, of the sun clothing the constellation of Isis. Let it be remembered that this constellation was in the east on the morning of the ninth of September, 1774. The symbol, Ariadne's crown in the Corona Borealis, was placed in the heavens by Bacchus; it is the symbol of Isis, the symbol of Eve, the mother of our race. In the 'Hierophant' we read: "The word Eve is synonymous with Isis, the Egyptian, and Ceres, the Greek goddess, and had her domicile in August, now in September. In the heavens we find the figure of a female, which astronomers call Virgo. In the Adamic projection of the spheres she is called Cavah (pronounced *Ka-a-vah*); in the Chaldaic projection, Eve; in the Egyptian, Isis; in the Latin, Maria; all of these signifying Mother of Life. A little to the north of this virgin, we find

the constellation Bootes, the Io-seppe of the Greek zodiac, whence our word Joseph; in Phœnician, according to Sanchoniathan, Ad-ham, whence our word Adam. So here in Paradise we find Adam and Eve in actual existence,"* Io Suph (Joseph) is wisdom of Isis.

Frederic de Rougemont, in his '*Le Peuple Primitif*,' speaks thus of the Egyptian myth of Isis:

Isis is, in a special sense, the mother and founder of humanity, and the traditions relative to Eve are fixed upon her in the same manner as Seth is confounded with Thoth. Eve, in the primitive legend, is a prophetess, and Isis, a woman, had first filled the office of priest. She also founded medicine, in discovering numerous remedies, and she cured by means of dreams those who came to consult her in her temple.

Eve is the sybil, the prophetess with the ear of corn, who, by her fall, introduced agriculture into the world, and who, so to speak, gave wheat to men. Isis taught the Egyptians the use of wheat and barley, but the remembrance of this benefit was tinged with a sadness of the cause of which they were ignorant. In the time of harvest they dressed the first sheaf, after which they lamented while invoking the goddess.

Why these tears in the midst of abundant crops? Why is wheat, whose culture calls for the vigorous arms of man, the gift of Isis, a woman, and not of Osiris? Because these crops, and these rude works that they prepare, date from the lamentable condemnation that Eve, the woman, drew upon humanity by her fall. The discovery of bread made from the lotus was attributed by some to Isis, by others to Menes. Now Menes is Adam, and Isis may then well be a deified Eve.

Isis, having taught agriculture, gave to Egypt her civil and criminal laws; but, when they relate how Isis, in the beginning, spun flax and hemp and made linen, they but repeat the traditions of the Jews respecting Eve.

Isis is an altered form, but always recognisable as the Biblical Eve. Through Genesis we can explain the consecration of the persea to the goddess. The persea is a symbol of immortal life. We see it on the coffins of mummies and upon other funeral monuments. It corresponds to the mysterious tree of Paradise, whose fruit would have procured to man eternal life.

With these strong proofs it appears to me that the word Genesis will bear the interpretation Gen-Isis, or Gen-es-is, the generations of Isis, or Eve, and this means the children of the white race only, in contradistinction to the children of other races on the face of the globe. The fact that the aborigines of this country and other nations have preserved the traditions of the flood, and not the knowledge of the Scriptures concerning the Noachian race, goes to prove that they are not the same people.

The ignorance of the Chinese, Japanese, Malays and Negroes of the truths in Genesis concerning the race of Eve, appears to

* The word Paradise is compounded of two words, meaning among the stars.

show that they are an entirely different and separate creation. If it were not so the myths would be found in their possession universally, but in many of the nations outside of the whites there is not a trace of mythology, and in the others only indistinct records, evidently borrowed from the children of Eve, or Isis, from the very source of mythology, inspiration, christianity, that is Egypt. Isis was the guardian of the constellation of the scales, and of the calendar, and of weights and measures. She is represented in all the great court-houses of our land as the goddess of justice. The kings of Egypt were required to swear upon her altars to preserve the calendar, their weights and measures. In the forepaws of the wonderful sphinx there is a temple of Isis, and I believe that it was upon its altar that these ceremonies were performed, and that to-day the Sagas-sons, or Saxons, through their measures, hold in their hands the key that will unlock all of these ancient mysteries.

THE Pyramid was said to be erected in honor of Isis. I believe that the constellation laid out in the heavens in the primeval world, as well as the Pyramid, will teach the fact that the Messiah proceeded from the Noachian race, that his glory as well as that of his kingdom is written in the rocks of that monument in the land of Egypt, and that this Messiah, who is the son of Isis, the seed of the woman who should bruise the serpent's head, came to set up a kingdom upon the earth, whose government is represented by the divine symbol—a woman clothed with the sun—which is called the sign of the Son of man in the heavens.

General Schuyler Hamilton, in his book upon the American flag, says that the stars represented a constellation, he thinks LYRA. In Admiral Preble's book upon the flag we find that the first banner ever thrown out by the race emanated from Egypt. This was the Labarum, or Banner of Isis. (We have but to add the colors and we have the stars and stripes.) In their processions they carried the symbol of the woman clothed with the sun, the crown of twelve stars under her head and the moon under her feet. This must be four thousand years old. Now, look upon many of our coins and we have the woman in the circle, representing the sun and the diadem of thirteen stars,

holding the liberty cap, or the cap of Liber, or Bacchus, and at her side the shield or coat-of-arms of George Washington, the defender of the woman, from which our flag emanated. On the other side we have the eagle, or symbol of Hercules, of a God supreme.

In the name Hercules is to be found the number 600; it is also in Bacchus and in Serapis, and on the banner of Columbus the symbol bears the same numerical value. Kabbalists consider the numerical value the climax of proof for the correct interpretation of a word or thought. Throughout the picture this cycle of 600 is manifest, and will, I think, by its understanding, prove the correctness of my thought. To this line of investigation I ask the attention of theosophists, kabbalists and students of the deep things of the world.

We find the following reference to the phœnix, which represents the cycle of 600, in De Rougemont: "In the celebrated myth the Egyptian phœnix had the grandeur and the form of an eagle. It appeared, they say, at certain astronomical periods, which are supposed to correspond to grand phases of the life of nations. According to some savants, the word phœnix signifies the dove, which would completely identify this bird with the spirit of God hovering over the waters. Its Hebrew name, 'Choul,' has the meaning of revolution, circle, cycle. In Job xxix: 18, we read: 'I shall die in my nest and shall multiply my days as the phœnix' (not as the sand). This bird dies on a funeral pile and arises from its ashes, as the world must perish by fire, to be born again to a new existence. The semenda of the Hindoos, like the swan and the phœnix, sings, at the approach of death, a song full of sweetness, the song of a world that perishes to arise again more pure and happy"—the new heaven and the new earth.

I shall hereafter endeavor to show the relation of the cycle represented by the phœnix to the truths I have essayed to set forth in the picture, and the relation of both to the Pyramid.

Citizen Dupuis, a French astronomer, published in 1793 a most remarkable work, with a large number of engravings and planispheres from all parts of the world. He endeavored to

prove that the Messiah never came, and that the whole of the Christian religion was founded upon an astronomical myth.

Upon Dupuis' work much has been written, some claiming that the teaching of the New Testament was the work of the Essenes. There are some theosophists, also a low order of astrologers and infidels, who follow the teachings of such writers as Dupuis, and stand to-day without faith.

Godfrey Higgins wrote a work of most marvelous research in 1834. I cannot say that he follows in his unbelief the conclusions of Dupuis, but digging deep into the Kabbala, astronomy, and all the ancient lore called mythology, he, like Dupuis, has given us the means to prove that the Messiah came in person, and that the stars and constellations will positively show it. And further, that this country and this government is that which he came to set up as the nucleus or leaven, or grain of mustard seed, foreshown in an astronomical myth, which has been fulfilled in the landing of the Santa Maria on the shores of San Salvador, and of the Mayflower on the shores of the new world; and that the prophecies which were set forth as myths have been fulfilled in the rise of this country, which is the manifestation of THE NEW HEAVENS AND THE NEW EARTH—the Stone Kingdom of Daniel—which kingdom will yet stretch from the icy capes of Labrador to the frowning battlements of Cape Horn, and from that Hoary Rock of the Pilgrim Fathers to the Golden Gates of the Great Pacific Ocean.

Mons. Dupuis thought the Argonautic story merely astronomical. Sir W. Jones calls it a mixed story. He says: "This is a mixed fable which is astronomical in one sense and chemical in another. But it is of Egyptian, not of Grecian invention. The position of the ship Argo in the heavens would render this assertion evident, were we even without the authority of Plutarch for saying that this constellation is of Egyptian origin. Now the chemical sense of the fable, say the alchemists, is so clear that some ancient Greek author, of whom Suidas, according to his custom, probably borrowed the language, thus expresses himself: 'Golden Fleece—This is not what it is poetically said to be, but it was a book written on skins, containing the mode of making gold by the aid of chemistry.'" (I quote

General Hitchcock when I say this was the philosopher's stone of the alchemists *i. e.* DIVINE WISDOM, and had nothing to do with transmutation of metals.)

Upon this passage Higgins thus comments: "I believe that whatever was meant by the golden fleece of the Argonauts was also meant by the apples of the Hesperides. The same mythos is concealed—that the Ionian heresy of the Magna Mater (Isis), and the tree of knowledge of good and evil of paradise, and the allegories of the tree bearing twelve fruits, are all implicated. In one case the book or written skin conveyed the knowledge; in the other the tree, of which the leaves were letters; the fruits, the books conveying knowledge."

"Every one has heard of the celebrated boat of Isis among the Egyptians, Greeks and Romans, but the northern nations also worshiped her in the form of a ship. This ship was placed in the constellations and called Argo. In Egypt this was called Sothis or the star of Isis. This very well connects the Arga and Isis the Saviour—the ship in which the seed of nature (Noachidæ) was preserved. The Argo is clearly the Arga of India, or Omphalos, in which voyages of salvation were made. Jason, the captain, is IHS-on or the Saviour. Minerva, or divine wisdom, invented the ship." Is not Jason Ia-son, the Son of God?

"The emblematic fruit of the tree of knowledge has been generally considered to be the apple; but it was very often described by the grape growing on or hanging to the elm. On ancient cameos the tree of knowledge is constantly described by a vine, producing its fruit among the branches of the marital elm. There is nothing in the apple or its mythical history to favor its pretensions; but the grape, the fruit of Bacchus, is described by the Greek word meaning wisdom, and again *the* wisdom in the Latin *rac-emus*. The Greeks made out the apples of the Hesperides and the golden fleece from this mythos. In the Oriental language the fruit was *souph* or wisdom; and as *souph* meant also wool, of course they took the gross idea, and instead of sacred wisdom, made golden fleece. And their word for fleece meaning also apple, thus they got their golden apples. In a similar manner arose almost all the vulgar mythologies of

the Greeks—a very elegant but generally very unscientific nation. The elm is commonly planted in Gaul and Italy for the vine to ascend, and is selected as the tree of knowledge because it was the name of the first letter of the alphabet, or the Aleph of the Hebrews, which meant the trunk of a tree, the tree which Virgil met with at the side of the road to hell, loaded with science—as the *mem*, the 600, was united to the *vin* in the name of the word Muin, the name of the letter which denoted the most sacred of the cycles."

Here we have the golden fleece, the yellow parchment, the roll upon which the Divine Word was written. The Scriptures were written upon the fleece, and hence I believe that the Greeks understood what they meant when they used the word fleece—a great truth was concealed. *Diplomas* are always written upon parchment, and the expression, getting our sheepskin at college, meant also, the obtaining of divine wisdom, the knowledge of which is written on the skin or fleece of a sheep. It will be remembered that Luther said, "*The Bible is a great tree and sometimes I pluck off a few pears or a few apples.*" It was the fruit for which the Argonauts sailed to the garden of the Hesperides. This was the golden fleece, the divine wisdom, the Book which our forefathers established in the new world, the parchment or scroll, the written word which they planted in our schools, and no man may, with impunity, attempt to move this candlestick out of its place.

CHARLES LATIMER.

EARTH'S RADIUS THE RULING METRON.

There could scarcely be a more inexpert argument for the beauties of the French system of metrics than the one lately used by a correspondent of the *New York Evangelist* ("G. J." of Boston), that our decimal currency affords an apt means of "object teaching" in schools. If our currency were wholly decimal the argument might apply, in the same sense only, however, that it would to any other decimal system founded on the inch, foot, yard, cubit or ell. The French idea would dispense, both for actual use and as "objects" in teaching, with the familiar half dime, quarter and half dollar, and quarter and half eagle. These convenient relations, founded on the binary arithmetic, are the only fractional ones which are really indispensable, except for circular measure, and will never be discarded by our people. They substantially subsist between the inch with its decimal correlations, and the acre with its decimal cubit and perch, the quarter and half inch, the five inch "span" of Lieut. Totten, the cord measure and the rod. That these relations can be made exact, and earth-commensuric with the best known and easily determined cosmic hue, by an adjustment so slight as to be of no inconvenience, and interfere with no vested rights, has been shown a thousand times, from Sir John Herschel down. Why, then, ask us to change for a foreign system, every way non-commensuric and unscientific, of which but a fragment, its decimal feature—a partial recommendation at the best—remains?

Possibly, as Lieut. Totten suggests, the adjustment had better not be made until the people are better informed on the subject, and the cosmic dimension, or grand metron of comparison, more exactly ascertained. This last can never be done by the old method of assembling and comparing scattered short arcs, measured upon the varied contour of our earth, but only by a connected line upon a meridian like that of the Pyramid,

supplemented by such physical tests as can be instituted at points along its nether limb.*

Doubts are often expressed whether the prediluvians or the ancients possessed such knowledge of the size of the earth, of the π ratio, and of profound cosmic principles, as has been ascribed to them; and whether such scientific knowledge was really at the bottom of their systems of metrics. Most certainly, the ignorance of Europe less than a hundred years ago is suggestive of such doubts. But, looking beyond the European veil and through the strictly mathematical forms of ancient Grecian and even prehistoric architecture and sculpture, to and beyond the dawn of history, we realize that we are in the presence of men whose attainments, in many respects, were the growth of ages of thoughtful development, compared with which our own recent emergence from the incubation of the middle ages is but as a day. Whatever may have been the state of things before the deluge or the Pyramid, the earliest writings and decipherable tablets alike reveal the heavens mapped into constellations to mark "times and seasons," in part, at least, the sky-marks of to-day. So, too, the ancient mariners of Phenicia, Syria and Tyre must have observed at sea, in every direction, the distant approaching top-mast before the hull, and as they neared the land, the mountain crest before the foot-hills on the shore. And the apparent rate of curvature was always the same. The earth was a sphere, its dimensions, one of the most important facts in nature, an everlasting and unimpeachable metron! But how to measure it? As they went north, the pole-star arose, and the southern constellations and the noonday sun sank; and as they sailed through the Erythrean sea and around Lybia, returning through the Pillars of Hercules, the sun, for a long part of their voyage, blazed on their right hand, northward. Herodotus speaks of it. These

* In the French measurement to ascertain the length of the metre there were two serious sources of error. In Peru the presence of vast mountain masses had the effect to deflect the plumb-line or spirit-level out of normal relation with the earth's centre. On the other hand, the Lapland arc was measured on the frozen surface of the Tornea. The expansion and contraction of ice—the effect of varying temperature—would be a constant and serious source of error in linear measurement. It may be doubted whether the effects of either of these disturbances was wholly eliminated.

sailor-merchants made three-year voyages to the most distant lands. The tin of Cornwall was a familiar and important commodity in the time of Moses. These things are but a type of what always must have been, so far as we can conceive of the existence of the human mind. And as often as civilization—the true phoenix—may have arisen from her ashes, some Eratosthenes or Posidonias must have revived the ancient thought, to measure the earth by meridian observations. And however it may have happened, unless we reject all written and monumental authority, ancient systems of metrics were inter-correlated, on the one hand, either radially or circumferentially, with the earth; and on the other, with the normal articulations of the human frame. And as a radius is the guiding unit of geometry, so would the radius of the earth be the ruling metron.

It is on considerations like these, irrespective of any one monument or book, that the theory of correlation in ancient metrics and the doctrine of the sacred cubit really rest. We know it is not a *mathematical demonstration*, but it is the conclusion to which we are at present driven by that severe law of induction which compels us to reject theory after theory until we reach one which squares with all the ascertained facts. After all, this tentative process underlies many of our most profound convictions.

ALMAMOUN AND THE SACRED CUBIT.

A distinguished scholar has recently thrown some discredit on the character or existence of the sacred cubit among the Jews. On the contrary, for thirty years it has been known to the writer that among that people the tradition is pervasive and distinct. It is two-fold, some saying that, after the destruction of Jerusalem, the Romans sunk it in the Tiber; others, that being of precious metal, it was sunk in the imperial treasury. These seem to be two halves of the same story. To conceal the meanness of the vandalism the Emperor may have enacted a farce. Rabbis say that, the dimensions being lost, they cannot restore the tabernacle or the temple. Different impressions, the result of traditional influence, exist as to its probable

length, from the ancient Egyptian cubit of about $17\frac{1}{2}$ inches, up to 28 or 30.

But it is only in the light of its radial character, and of the foregoing tradition, coupled with the world-wide story, expressed in various forms, that the antediluvians, foreseeing the destruction of civilization by cataclysm or fire, had concealed enormous treasures and all the mysteries of nature and science in some vast monument, and with the wide-spread and immemorial search for "something lost," that we can rationally account for the operations of the Caliph Almamoun. Ambitious and learned, a patron of science and art, surrounded by "wise men of the east" who had kept aflame the torch, realizing that the recovery of that which was lost would make the Moslem the arbiter of the world and invest him with the master key, he pierced the Pyramid *six hundred and sixty-six(!)* years before the time when the learning and religion of Europe, having expelled the learned Orientals and Jews from Spain, were contesting the position of Columbus and Queen Isabella and maintaining the world to be flat. Failing to find what he sought, or to interpret what he saw, he enacted a "pious fraud" to satisfy his followers and impress on them the wisdom of the builders, returned to Bagdad and resorted to an astronomical test. He summoned astronomers, who, on the plain of Mesopotamia, measured the length of a Babylonian degree, $56\frac{2}{3}$ Arabian miles. Taking the received dimension of 2,146 English yards, the result for the earth's circumference is 131,335,200 English feet, nearer by miles than is deducible from the French measurements less than one hundred years ago. Possibly this may account for the singular approach to correctness of the Arabian gauge to-day.

CIRCULAR DIVISION IN THE PYRAMID AND TEMPLE.

I am aware that many, whose opinions are entitled to the highest respect, trace an apparent connection of the current division of the circle, $\frac{1}{6 \times 60n}$ with the Pyramid. But on theoretical grounds I believe it to be wholly Babylonian, and not clearly traceable in that monument. Lieutenant Totten has shown

that, for an arithmetical reason, the geometric division, $\frac{1}{24 \times 10^n}$, applies equally well, n being in each case a positive whole number. And in fact, to fit the plan according to the views of Mr. Ballard, the royal Babylonian cubit has to be adjusted out of its relation to the Karnak rule. And where the 12-inch foot, the 24-inch gauge, and the 36-inch yard have been pointed out, they seem simply to indicate the geometric inch as an unit in connection with the natural divisions of time—the months, the hours and an *approximate* year in days—but certainly not sexagesimal subdivision. And if the English mile were contained exactly 21,600 times in the small circle swept by the Pyramid, there would still be room for some ingenious critic to claim that $21,600 = 240 \times 10 \times 9$ indicates simply the geometric degree, the decimal arithmetic and the 10:9 slope of the arsis. And certainly the ratio between the homologous dimensions of the equatorial circle and that swept by the Pyramid, is an *approximation* to that between the sacred and Mosaic cubits.

The fundamental diagrams illustrate some of the correlations as well as the simplicity of the geometric degree. From either the Egyptian or Persian figure, by simple parallels and lines drawn through the centre and exact intersections, the division by 24 is reached, and the square disclosed in several positions without having been used as an implement (Fig. 4). From the Syrian, in the same way, the $\frac{1}{16}$ is reached, and, in fact, the $\frac{1}{24}$, with its fundamental triangle, by simply observing that the chord cd of the $\frac{1}{8}$ is drawn through the intersections of the crossed diagonals of the quarterings. To disclose the principle of subdivision we resort to the square and compass, or to the compass alone, upon the diagonal ab in Fig. 3, determine extreme and mean ratio, and so the chord of the $\frac{1}{16}$ and the $\frac{1}{8}$ or pentalpha of King Solomon. And $\frac{1}{8} - \frac{1}{16} = \frac{1}{16}$; also $\frac{1}{8} - \frac{1}{16} = \frac{1}{16}$; and all the commensurable arcs above this limit, except six unimportant ones [they are the $\frac{1}{32}$, $\frac{1}{64}$, $\frac{1}{128}$, $\frac{1}{256}$, $\frac{1}{512}$ and $\frac{1}{1024}$] obtainable only by successive bisection, are disclosed without empiricism or rupturing the degree. This is not possible in the Babylonian or any other method.

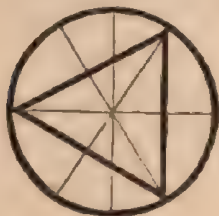
Taking the diameter at the normal human height of 70 inches, the versed sine on the chord of $\frac{1}{3}$ is the Egyptian cubit, and that on the inscribed square the natural foot of 10 inches, to the closeness of Archimides' ratio. In the same manner, taking the statuary height of 84 inches (Professor Felts' method), we have the Russian fathom, the Babylonian cubit and the 12 inch foot.

Figures 1, 2 and 3 were sacred symbols of high import among the Egyptians and Orientals, the Mexicans and Peruvians, and known to the North American tribes. Fig. 5, the pentalpha, came to be highly prized as the symbol of absolute perfection. It is the very seal of the Temple, and was borne on the banner of King Antiochus, the Washington of Syria, and is in general use as a talisman (Ballard, "Solution of the Pyramid Problem," p. 91). Its connection with the Pyramid is clearly brought out by Mr. Ballard, and in Lieutenant Totten's remarkable work ("An Important Question in Metrics," etc.) recently published.

Search among the ruins fails to disclose the $\frac{1}{8640}$ division in the temple. Nor does the indication in the compromise system of Moses for civil use (72,000,000 cubits = 18,000,000 fathoms = 180,000 studia = 18,000 miles to the circumference) clearly connect that system with the tabernacle. Realizing, however, that the temple was planned by King David, every article by "measure and weight," at a time when, having composed his wars, he was settling all the affairs of the kingdom on a permanent basis, preparatory to his abdication; that the entire scheme was the work of one mind, illumined by all the light which then shone among men; that it was a unit, each part of the state and temple consistent with a pervading, uniform and perfect type; and that the institutes might furnish some index to the distinctive principle of circular division—if such there was—recourse was had to the royal will (I Chronicles, chapters 25, 26, 27).

The priesthood was divided into twenty-four orders; the musicians into twenty-four hereditary bands, with twelve leaders in each. But in no department is a strictly scientific system, having perfect regard to time, number, order in assignment to duty, equal privilege of instruction, subsistence and every con-

FIG. 1.
EGYPTIAN,
PHENICIAN.



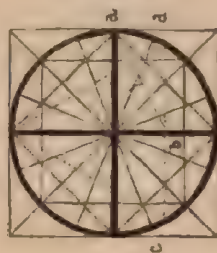
300,000 Stadia,
30,000 Miles,
3,000 Schoeni, or Stathmoi.

FIG. 2.
PERSIAN.



6,000 parasangs,

FIG. 3.
SYRIAN,
PHILETAIRIC.



16,000 Miles,

FIG. 4.
GEOMETRIC,
KING DAVID,
TURKISH.



POSIDONIAS,
ST. JOHN,
240,000 Stadia, 24,000 Miles.

FIG. 5.
PENTALPHA.



To the Earth's Circumference.

ceivable detail, so as to complete the circle of routine without jar or friction, more imperative than in the army. The royal orders arranged the National Guard in twelve Grand Army corps, each corps to serve as grand guard for a month in rotation, and so complete the year. Each corps was 24,000 men, 24 battalions of 1,000, or 240³ companies by the hundred. For there were "captains of thousands" and "captains of hundreds." The month being a lunation of $29\frac{1}{2}$ days, by throwing out the Sabbaths, each battalion would serve on police or outpost, or other assignable duty, one day in rotation, the training be complete within the month, with a day or so for muster and review. Josephus confirms it (*Antiq. Book vii, cap. 13*).

Circular division was $\frac{1}{24 \times 10 \pi}$.

NOTE.—The Babylonian (mythic) chronology (see 'Ancient History from the Monuments, Babylonia,' by George Smith) is:

REIGN.	DURATION.
Alorus.....	10 sari = 36,000 years.
Alaparus.....	3 " = 10,800 "
Amelon.....	13 " = 40,800 "
Ammenon.....	12 " = 43,200 "
Amegalarus.....	18 " = 64,800 "
Daonos.....	10 " = 36,000 "
Eudoreshekus.....	18 " = 64,800 "
Amempsinus.....	10 " = 36,000 "
Otartes.....	8 " = 28,800 "
Xisuthrus (Noah).....	18 " = 64,800 "

DELUGE.

86 kings.	Evekhous, 4 neri = 2,400 years.	} 34,080 or 33,091 years.
	Comosbelus, 4 neri and 5 sossi = 2,700 years.	
Porus, 35 years; Nekhubes, 43 years; Nabus, 48 years.		
Oneballus, 40 years; Zinoerus, 46 years. War of Titan (Nimrod) etc.		

The system is, counting a year as one second of arc, $\frac{1}{6 \times 60 \pi}$, that is:

Great Cycle = 360 deg. or sari = 2,160 neri = 21,600 min. or sossi = 1,296,000 yrs. or sec.					
Prophetic day = 1 " " " =	6 " =	60 " " " =	3,600 " " "		
	1 " =	10 " " " =	600 " " "		
		1 " " " =	60 " " "		
			1 " " "		

The Hindoo is (Dawson's 'Archaia') :

1 day of the gods	=	1 year.
1 year of the gods	= (if 360)	360 years.
1 Critya or Saya age = 4,000 years of the gods	=	1,440,000 "
1 age of the gods = 4 Critya	=	5,760,000 "
1 day of Brahma (calpa) = 1,000 ages	=	5,760,000,000 "
1 Manwantara = 72 ages	=	414,720,000 "
1 month of Brahma = 30 calpa	=	172,800,000,000 "
1 year of Brahma = 12 months	=	2,073,600,000,000 "
1 life of Brahma = 100 years which is about half elapsed.	=	207,360,000,000,000 "

The factors seem to be Mosaic or Abrahamic, anyway, not Babylonian. By using the tropical year the figures would be changed.

JACOB M. CLARK.

REPORT ON "THE METROLOGY OF COINS OR VALUES."

The monetary system of the ancient world must necessarily have been of the simplest and most universal character, but well adapted to answer all the purposes of a universal system of exchange between nations in primitive times. The money consisted of pieces of gold, silver and copper. It was uncoined, without any authority stamped upon it, excepting the impress of its weight which designated its value. In more modern times coins were issued in gold and silver, whose value in weight and quality were certified by a design of some kind being stamped upon them. But the ancient money at first consisted simply of ingots of gold and silver uncoined, with the weight stamped upon each piece. Abraham is said to have been "very rich in cattle, in silver and in gold." (Gen. xii: 2, xxiv: 35.) This money was bullion or ingots of silver and gold. He also purchased the cave of Machpelah for 400 shekels of silver, *current money* with the merchants. (Gen. xxxiii: 16.) This was bullion also, or uncoined money. In fact, this was the only kind of money then in use all over Arabia, Syria, Babylonia, Assyria, Egypt, Persia, Media and Palestine. A fixed weight was given to single pieces as parts of some standard; the largest

and heaviest standard appears to have been a *talent*. The denominations into which it was broken were such as made them suitable to the value of the articles usually dealt in by the traders of different nations.

We have no proof that *coined* money was in use before the Exodus, nor until some time near the epoch of David and Solomon. The Hebrew nation certainly used Persian, Assyrian, Babylonian and Egyptian coins; but nowhere in the times of Moses can we find in the Pentateuch any mention of coined money. But when we come to the time of Ezra and the exile, we read of Persian coins being in use in Palestine. In the excavations in Palestine, Egypt, Assyria and Babylonia, no coined money has ever been found whose date is as far back as the Exodus.

The oldest coins extant are electrum *staters* coined in Lydia about the epoch of King Hezekiah (B. C. 720), which appear to have been issued on different standards to suit the different nations with which the Lydians had commercial intercourse. The first Greek coins were made of silver and were struck at Aegina about fifty years after Lydia (B. C. 670-660). The earliest coins mentioned in the Bible appeared about a century afterward (B. C. 538), in the time of Ezra, and are called *drams*, but were really Persian *darics* or gold *staters*. Their first general appearance in Palestine was during the reign of Cyrus (B. C. 538), and may have been sent by him to help the exiles on their return from captivity. (Ezra ii: 69.) The writer of the Chronicles mentions the same coins in relation to the money stored up by King David for the building of the Temple: "Five thousand talents of gold, 10,000 *drams* in gold, and 10,000 talents of silver." (I. Chron. xxix: 7.) The *dram* was a foreign coin of Persian origin, and better known as the Persian *daric* or stater, and had an average weight of 130 grains of pure fine gold. The double daric weighed 260 grains, or more correctly, 259.2000 grains.

The talent is evidently the prime unit or standard of the ancient system of weights, from which all the secondary units have been derived and determined. Its branches and denominations were determined by a circular unit of $360^{\circ}=1,296,000''$

of arc, and their values were fixed by the relative values of gold, silver and copper. The Egyptian talent cannot be traced to any other; it forms an independent system, and appears to be the actual parent of all the talents and monetary systems of the western world. The foreign names of all Hebrew measures are clearly indicative that the measures themselves were obtained elsewhere. The Hebrew bath is subdivided into 72 *logs*, and the Greek *metretres* into 72 *vestæ*, which cannot be accidental, but shows a community of origin, for the wise men of Greece and Rome were trained, like Moses, in all the knowledge and wisdom of the Egyptians. Euclid, Pythagoras, Solon, and a long list of the sages of almost all the countries of the ancient world, were students in the schools of Egypt, and carried its wisdom with them to enlighten the newly-born nations of the earth. Hence we find all the first systems of weights and measures amongst the Hebrews, Greeks and Romans have a unity of character and community of origin. In later times new variants sprung up and new systems were developed, with different modifications suited to a new order of things, which rendered a change necessary or desirable.

All the old systems of weights belonging to Babylonia, Greece and Persia, are divisible either by 6,000 or 3,600, and the six-thousandth or three thousand six hundredth part of the talent is a divisor of all higher weights and coins than a talent, and a multiplier of all lower weights and coins, excepting two-thirds of a talent. Why is this a feature of all primitive systems? Because the prime unit of a talent was originally divided and subdivided into secondary units by a circular system of 360° reduced to seconds of arc = 1,296,000". The chief standard gold coin, and the only one for a long time, was the Persian *daric* = 129 (129.6) grains. This was the standard coin according to which the silver money was adjusted. It is the ten-thousandth of 1,296,000" of arc in the circular system. This was the base of the ancient system, and it represented 1,296,000 grains, or 1" to a grain. The gold shekel or *daric* consisted of 129.6 grains when fully expressed, and the gold talent consisted of 100 manehs and 10,000 shekels or darics; so that the shekel

or daric was the ten-thousandth part of a gold talent consisting of 1,296,000 grains.

The first change was probably an adaptation of the standard scale to suit the relative values of gold and silver, which seems to have been as 1 to 12; so that the number of units would be reduced from 10,000 to 7,200, the maneh would be made to contain 120 instead of 100 units, and the talent lowered to 60 instead of 100 manehs. Thus 6 units of the gold talent would pass for 72 silver, and 10 gold units would be equal to one silver maneh. Other changes would be grafted upon the standard system, and the variant values would multiply. When we consider the general tendency of money—coined and uncoined—to depreciate in value and weight, it is a wonder that this standard system should have been preserved at all by any nation. Pollux tells us that the oldest Greek talent, the Æginetan, contained 10,000 Attic drachms and 100 Attic minæ. Aulus Gellius, referring to the time of Demosthenes, says a talent is equal to 10,000 drachms or shekels.

It is not known when it was found convenient to change this system and reckon 3,000 shekels instead of 3,600 to the talent, nor when a deviation from the sexagesimal division of the maneh was made and limited to 50 instead of 60 units. It must have been before the Exodus, for 3,000 shekels to the talent are reckoned in Exodus xxxviii: 25.

The Babylonian talent, as determined by existing weights found by Mr. Layard at Nineveh, may be illustrated by the duck-stone weight with a cuniform inscription of xxx manehs, which weighs 233,300 troy grains. It is half a talent. Hence $\frac{233,300 \times 2}{3,600} = 129.5444$ grains to each shekel, which is certainly a very near approximation to the standard 129.6 grains, when we make allowance for the wear of coins by age and weather and errors of weighing.

Thus, on reviewing the most ancient systems of values, in coined and uncoined money, the bullion pieces of uncoined gold and silver had definite denominational weights assigned them, which were determined by a circular system based upon a circular value of 360° expressed in seconds of arc, representing

1,296,000 grains in troy weight, thus giving to the talent 10,000 shekels and to each shekel 129.6 grains. But in later times the fraction of a grain in this shekel was discarded, and 129 grains took the place of 129.6.

MODERN SYSTEM.

The monetary system of the United States is really a return to the first and oldest system of the ancient world, having 1,296,000'' as the numerical base of circular measure, in which seconds of arc represent troy grains in weight. The half eagle, when correlated with circular measure, has the old ancient value of the shekel = 129 grains of standard gold, with the fraction of a grain discarded for convenience of computation. It is the ten-thousandth part of the ancient talent in worth and value. The *eagle* contains 258 grains of standard gold. Its value by circular measure would be $129.6 \times 2 = 259.2$ grains; but, when fractions of this prime unit are discarded, as in the old system, the eagle would be $129 \times 2 = 258$ grains of standard gold, just as we now have it. The double eagle, eagle, half eagle, quarter eagle and gold dollar are of like proportions in grains of standard gold, and follow the same system of circular measure.

The silver dollar also is constructed upon a circular base of 1,296,000'', which also represents 1,296,000 grains. It contains 412.5 grains of standard silver, which is determined by dividing the circular measure by the ratio of diameter to circumference, or $\frac{1,296,000}{3.141592} = 412.5$. This is the length in inches of the king's room in the Great Pyramid of Egypt, and correlates with circular measure and the British inch. *Thus the gold coins of the United States stand correlated with the circle, and the silver coins with the diameter of that circle.* To have made this system complete, the silver half dollar, quarter, and all lower denominations should have followed the same system in like proportions, as is the case with gold coins. The copper currency is an anomaly. It ought to have been based on the value of a fractional part of the silver system. The cent contains 168 grains of pure copper. It ought to have been $\frac{412.5}{2.5} = 165$ grains, so as to

correlate with the gold and silver system, because the standard gold and silver coins consist of pure copper in a definite proportion. The alloy of gold coin consists of equal weight of silver and copper, and the alloy of silver is pure copper. The alloy of both gold and silver coins is 900 parts of pure metal and 100 parts of alloy. Hence the half silver dollar should contain 206 grains instead of 192, and the quarter dollar should contain 103 instead of 96 grains.

In comparing the United States system of currency with the French system, the former is more directly correlated with cosmic values, and can be directly classified without any adjustment or allowance. For instance: The old daric or shekel weighed 129 grains, and this is the weight of the Federal half eagle = ten-thousandth part of the old talent, and the ten-thousandth part of $360^\circ = 1,296,000''$, representing 1,296,000 grains in Troy weight, omitting fractions. Now the relative value of silver and gold may be taken, as the ancients took it, as 1 to 12; therefore, $129 \times 12 = 1,548$ grains. This may be divided, after the plan of the ancients, into the weights of all the old principal and heavier coins of the Persian currency, which formed the first currency ever made in the world so far as we know.

$1,548 \div 6 = 258$, three *sigli* = 1 United States gold eagle.
 $1,548 \div 9 = 172$, two " = $\frac{2}{3}$ United States gold eagle.
 $1,548 \div 18 = 86$, one " = $\frac{1}{3}$ United States gold eagle.

Suppose now we construct a table with these values showing the French decimal notation and values and the United States decimal system, with equivalent values in the present currency in troy grains, beginning with the one hundred thousandth of a gold eagle, we should have:

FRENCH.	TROY GRAINS.	UNITED STATES.
1 Milligramme,	.0154	.0154
1 Centigramme,	0.1543	0.1548
1 Decigramme,	1.5434	1.5480
1 Gramme,	15.4340	15.4800
1 Decagramme,	154.3402	154.8000
1 Hectogramme,	1543.4023	1548.0000

Evidently the United States system would be more accurate and in perfect correlation with every form of cosmic force, even

if the denominations were constructed upon the French scale, and the United States gold eagle = 258 grains made the base on which the scale must rest.

The Canadian and United States currencies are based on the *Decimal System of Notation*. The values increase and decrease from right to left and left to right in a tenfold ratio by simply sliding the decimal point (or separatrix) right or left. The values are then computed like simple numbers. It is to this circumstance that these currencies owe their great simplicity. To my mind, the decimal currency of the United States is one of the most simple, comprehensive and convenient for commercial purposes, and for international and universal use amongst the nations of the earth, ever invented.

In the ultimate adjustment of our systems of expressing values and their correlation with the various forms of force and circular measure, the π relation must come in somewhere. The United States system of currency shows practically how this can be done. The *gold* currency is correlated with the circle, and the *silver* currency with the π relation of diameter to that circle. The classification is cosmic, and the correlations of all national systems of currency can be expressed by simple factors under this system, so that all would stand related to the cosmos, and to circular measures of time, place and every form of force in nature.

The prime unit—the golden eagle—is at the head of the scale, and any small error in practically obtaining its weight in grains would virtually disappear in the lower denominations.

GENERAL REMARKS.

The past experience of almost every nation using currency has decided practically, beyond all controversy, that but few denominations are really necessary for all the practical purposes of trade and commerce, from the merchant and trader down to the manufacturer and mechanic. We have eagles, dollars, quarters, dimes and cents; but the ones most in use are dollars and cents. The French metric system has a formidable list of denominations, but the people mainly use the killogramme

unit and gramme. A very few denominations answer all the purposes of trade and commerce.

Herein lies the immense superiority of the decimal system over all others, because few subdivisions are necessary. As a system of currency the duodecimal and octonary systems have no advantage. The number of coins when halved and quartered are about the same under any system. We have 100, 50, 25, 10, 5 and 1 cent for decimal currency; and 80, 40, 20, 10, 5, 1 for octonary currency; and 60, 30, 15, 10, 5, 1 for duodecimal. Six different coins for each system, and one-half are common to all. We cannot do without the duodecimal and octonary systems of weights and measures, because we find it convenient to subdivide some things into twelve and others into eight parts, both in the workshop, warehouse, store and market. But neither the one system nor the other is adapted for counting-house work; and, in a commercial community, counting-houses and banks form probably the most important branches of all commercial institutions. Nor are the duodecimal and octonary systems adapted for mental arithmetic and rapid calculations when transacting business and estimating values in currency. The decimal system is essentially a currency system for banking and counting-house purposes. After we have made one binary, decimal, duodecimal, octonary and other divisions in the market, workshop, store and warehouse, in the practical operations of weighing and measuring, according to such tables of weights and measures as are in use, and we come to represent these weights and measures by values in coins and currency, we then want a simple, easy and rapid system to take up the values in weights and measures that needs but little reckoning and handling of figures. It is when all this has been done that the decimal notation steps in and asserts its preëminence over all others, for by this system the largest and most complicated fractional part can be expressed and computed as part of the integral factor as if no fraction was present.

The practical value and utility of any prime number as a metrical radix is oftentimes urged on purely mathematical grounds, and the numbers 12 and 8 are proposed because of the number of their subdivisions and general use in certain cases.

Thus 8 as a radix has given rise to the octonary system, and 12 to the duodecimal. But in a system of currency we don't look for a radix that can be bisected into the largest number of denominations; we look for a number as a radix that will multiply and divide quantities without any alteration of the figures, so as to save time and troublesome calculations and entries of figures of different denominations, and to prevent the chance of errors in computation. The decimal system is the only one that can do this. Whoever undertakes to devise a system of notation must remember that the very structure of all numbers implies a decimal notation; for the figures, as they stand in the order of rotation, are multiples of ten—as units, tens, hundreds, thousands, tens of thousands. A decimal notation is in the very structure of every number above ten.

S. BESWICK.

Strathroy, Ontario, Canada.

THE E. N. E. TRENCH AND OBLIQUITY OF THE ECLIPTIC.

The four great trenches on the east side of the Pyramid have attracted much attention. Found by Prof. C. Piazzi Smyth in the winter of 1864-5, they are now sufficiently investigated to warrant the belief that they held an important place in the construction of the wonderful monument with which they are connected. Some have maintained that they were only mortar troughs or reservoirs for water; others that they were connected with the azimuth and altitude of the Pyramid. I am not aware that an altogether satisfactory explanation of their use has yet been offered, and it may be that the following attempt at a solution of the question will not quite satisfy antiquarians, nevertheless the facts we here present may lead to the truth of the matter.

Without being very exact, we may say that these trenches are in length about 175 feet each. Close upon the east side of the Pyramid, and midway between the lines of its northern and

southern boundaries, a basalt pavement was constructed about 175 feet square. It was a magnificent work, which covered more than one-third of an acre. The blocks of basalt were all sawn and fitted together. Only one-quarter of it now remains *in situ*. Outside of this basalt square are the four great trenches, radiating, as it were, from its centre—one on the north side, beginning about 115 feet from the centre and running in a northerly direction; one on the south side, beginning about the same distance from the centre, and running in a southerly direction; and one on the east side, beginning about 90 feet from the centre and running E. N. E. The depth of these three trenches varies from 6 to 24 feet, and the breadth, near the surface of the rock in which they are cut, varies from 10 to 20 feet. The fourth trench, beginning at the very edge of the basalt square, runs N. N. E. with a gradual downward slope. It is about 3 feet wide and 20 inches deep. It has been thought that this shallow trench was built for a water conduit to carry off the washings of the basalt pavement. But whether this be correct or not, such evidently was not the use of the three deep trenches we have described, for they were built with extreme care, even the natural rock excavation being cut to fit the stones with which they were lined, and have no water outlet as yet discovered.

Having thus given in a rough way the form and relative position of these trenches, we may present our theory of their use. The fact that all point inwardly towards the centre of the fine basalt square may be taken as evidence that they were constructed purposely to bear certain definite relations to one another and to the basalt paving, and thus to the Pyramid. To determine the character of these relations, it might serve us well if we could find some reason for the size and form of the square itself. We ask then, What was in the mind of the architect when he laid out this fine piece of paving?

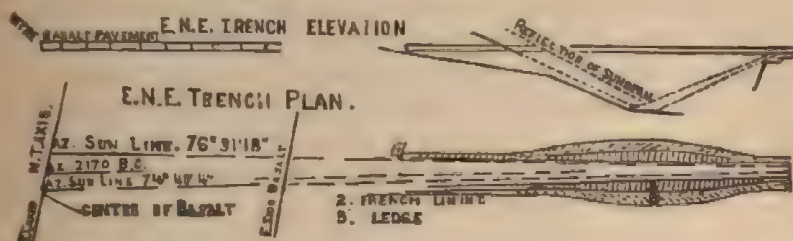
The width from north to south through its centre is 2124.7 inches; the east side is located 2148.3 inches east of the line of casing stones found by Mr. Petrie on the east side of the Pyramid. But these casing stones being 36 inches west of the meridian of the outer corner of the S. E. socket, the east side

of the basalt square is $2,148.3 - 36 = 2,112.3$ inches east of that meridian. Therefore so much of this square as lies east of and contiguous to the meridian of the S. E. socket measures 2,112.3 from west to east and 2,124.7 from north to south. The polar axis of the earth being computed at 41,708,000 feet, one 20,000th part of it on a scale of one inch to a foot is 2,085.4 inches; and the equatorial axis in long. E. 31° being computed (Captain Clarke) at 41,852,000 feet, one 20,000th part of it, on the same scale, is 2,092.4 inches. Hence if an ellipse having a major axis equal to 2,092.4 inches and a minor axis equal to 2,085.4 inches were traced on the basalt square, as upon a drawing-board, tangent to the meridian of the S. E. corner socket, it would represent the meridional perimeter of the earth and leave a margin or border on the north, south and east sides equal to 19.6 ± 1 inches, which is one-half the length of a second's pendulum in lat. $29^{\circ} 58' 51''$, and one-fourth the length of the coffer. From these evidences we may conclude that in laying out this basalt square the architect had in mind the equatorial and polar diameters of the earth.

Allowing this to have been the case, a legitimate inference is that the great trenches constructed north, south and east of the square, and pointing towards its centre, have an astronomical bearing upon the work and design of the Pyramid. Of the N. and S. trenches some uncertainty exists in Mr. Petrie's figures for the position of the inner end of the N. trench, owing to neglect to measure that end. According to his computations their axes are nearly parallel, but if they were designed to be meridional axes they would be distant from each other at the centre of the basalt square by 45.7 inches (one 100th of a half side of the geometrical base of the Pyramid), instead of 50 inches, as he gives it in his survey. However, the relation in which they stand to each other and to the basalt square, and the great probability that their axes were due N., appears to indicate that they were designed for transit observations, the bottom and sides being blackened and water introduced for reflection.

This hypothesis would greatly strengthen the theory that the E. N. E. trench was built for some astronomical use. Mr.

Petrie makes the azimuth of this trench $75^{\circ} 58' 23''$, and says "the axes at the ends were estimated by means of the plans here given, but on double this scale," which is $\frac{1}{800}$. "and the rock is so roughly cut in most parts that nothing nearer than an inch need be considered." The trench has a narrow ledge at its east end, but along either side 140 feet westward the ledge is about 50 inches wide and 40 inches deep; the central or deeper part—that is, the trench proper—is 43 inches wide at the east end. The bottom or floor then is reached, by a somewhat abrupt descent, at 200 inches below the surface, thence it slopes downward 200 inches at an angle of about 20° , then runs level 300 or 400 inches, then slopes upward 300 or 400 inches at nearly the same angle as before, then gradually rises towards the surface at an angle of about 6° .

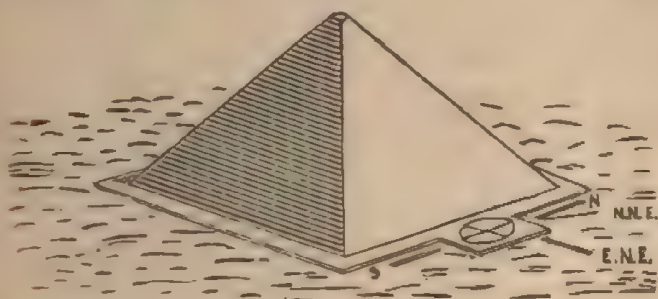


From the east end the sides of the deep part at first diverge rapidly and the trench widens as it approaches the basalt square, the widest place, however, being at the deepest part, or about 50 feet from the east end. Mr. Petrie found abundant evidence that this, as well as the north and south trenches, was lined with fine hard stone, "hardly less than 30 inches thick, considering the height was 20 feet" at the deepest part. Stones 10 or 15 inches thick would suffice for lining the shallow part of the trench towards the west end. This agrees well with the somewhat oval form of the rock cutting, as shown in the plan.

At 1,603 from the east end, where the bottom rises up to the level of the ledge, the whole width, including ledge, is 172. Supposing the ledge to be as wide there as at the east end, about 50, and the lining stones 10, a space of 52 inches would be left for the trench proper, $172 - 2(50 + 10)$. This remarkable widening, in a direction opposite the sun rising,

suggests some astronomical use connected with an eastward azimuthal position of the sun. The mean azimuth of the trench being about 14° north of an east and west line, it is evident that, in a general way, it points towards the sun at his rising about the time of the summer solstice or longest day. But the sun does not always make the same distance from the equator on the longest day. His declination varies $2^\circ 37' 22''$, consequently, if it were desired to build a narrow trench to receive his rays on the longest day of *every* year, and at about the same hour of the day, the trench must be widened in the direction opposite the sun rising. But could the sun's rays ever touch the deepest part of this narrow E. N. E. trench? Certainly not while he is south of the equator, nor when on the equator, nor at his rising when farthest north. But, as he ascends above the eastern horizon at the summer solstice, there comes a moment when his rays are in the same vertical plane as the axis of the trench. Let us see how this is when his northern declination is the greatest—that is, $24^\circ 35' 58''$ north of the equator. His polar distance is then $65^\circ 24' 2''$, and when he has risen $24^\circ 35' 58''$ above the horizon, his zenith distance is $65^\circ 24' 2''$. Now, the polar distance of the observer in latitude $29^\circ 58' 51''$ being $60^\circ 1' 9''$, we have the three sides of a spherical triangle from which to compute the sun's azimuth. In this triangle let P be the pole, Z the zenith and S the sun, then will the sun's azimuth be the angle $PZS = 74^\circ 40' 4''$. In like manner we find that when the sun's declination at the summer solstice is least—that is, $21^\circ 58' 36''$ —and his altitude in latitude $29^\circ 58' 51''$ is $21^\circ 58' 36''$, his azimuth is $76^\circ 31' 18''$. Under these conditions the difference in his azimuth at the greatest and least declination is $1^\circ 51' 14'' = 76^\circ 31' 18'' - 74^\circ 40' 4''$. Therefore, at a point 1,603 inches from its east end, the trench must be 51.36 wide $= 1,603 \times 2 \text{ tang. } \frac{1}{2} (1^\circ 51' 14'')$ to allow for this difference in azimuth, which is within three fourths of an inch of what we found to be the probable width of the trench between the lining stones at that point. It will be observed that one of these solar azimuths is $52' 55''$ south of Mr. Petrie's axis, and the other is $1^\circ 18' 19''$ north of it—a small difference that may easily be accounted for in the

uncertainty of Mr. Petrie's "plan" and the unknown line of finish of the trench walls. A remarkable coincidence may here be noted. When the sun is at his greatest possible declination, $24^{\circ} 35' 58''$, and his altitude is $24^{\circ} 35' 58''$ at the Pyramid, the vertical plane of light that rests upon the centre of the east end of E. N. E. trench also rests upon the centre of the basalt square, ± 1 inch. In the year 2170 B. C. the sun's northern declination at the summer solstice was $23^{\circ} 57' 43''$. When he had risen on that morning to the altitude $23^{\circ} 57' 43''$, the shadow of a plumb line had an azimuth $75^{\circ} 7' 22''$, and the plane of light from a vertical slit at the east end of the trench cut the N. trench axis 25 inches north of the basalt centre. At his least declination, $21^{\circ} 58' 36''$, his azimuth would cause the vertical plane of light to cut the N. trench axis 103 inches north of the basalt centre.



We conclude, therefore, that the E. N. E. trench was a time indicator based upon the variable obliquity of the ecliptic, and that it was used in making observations of the sun's solstitial declination and in determining the position of stars and constellations in their relation to the sun and earth. It is said that a small structure originally stood just east of the Pyramid, supposed to have been a "temple." In view of the foregoing relations which we have traced between the trenches, the earth and the sun, may not the "temple" have been an observatory built over the very centre of the basalt square for astronomical purposes? The theory we have advanced of the design and use of the basalt square and trenches, particularly the E. N. E.

trench, may or may not be correct, but it certainly does not conflict with the best measurements of the pavement and trenches yet obtained, nor with established astronomical data.

H. G. Wood.

REPORT OF COMMITTEE ON STATISTICS RELATING TO WEIGHTS AND MEASURES.

CLEVELAND, O., February, 1885.

CHARLES LATIMER, ESQ., PRESIDENT INTERNATIONAL INSTITUTE, ETC.:

Sir:—The committee appointed to obtain statistics relating to the weights and measures in use in the several States and Territories of the United States, have the honor to report that they have communicated with the governors of the several States and Territories, and have received replies more or less complete. From these replies, and from such other sources of information as were accessible, the committee has prepared a table showing the number of pounds of various commodities assumed by law to be equivalent to one bushel in bulk in such States and Territories as have enacted laws on this subject. How extremely arbitrary such enactments are is evidenced by the great variation in the number of pounds assigned to a bushel of the same commodity in the several States, and still more so by the fact that, in the same State, the numbers are subject to alteration from time to time by an amending act of the Legislature. This anomaly is due to the fact that, while merchants have found it more convenient to determine the quantity of a bulky material by weight rather than by measure, they still persist in the old habit of reckoning the value by the price per bushel. But, not being able to agree upon the number of pounds constituting a bushel, they have appealed to the legislatures of their respective States to fix by law that which cannot be fixed in fact. The result is a complication of matters rather than a simplification, so that, among so many States and such a large number of commodities, one is at a loss to know what does constitute a bushel until the table has been consulted. Some of the States seem to have no law on this subject, but conspicuous among these is the State of Nevada, which not only avoids all such arbitrary legislation, but provides that her people shall sell all grains and vegetables by the pound. The Hon. J. W. Adaws, Governor of Nevada, remarks in his letter, alluding to this custom: "We find it much more convenient than the old plan."

The additional "Items and Remarks" following the table furnish a variety of curious and useful information, gathered from our correspondence, which could not find place within the limits of the table.

All the States and Territories adopt the units of weight and measure of the United States, standards of the same being furnished them by the general government. Many of the States provide that duplicate standards shall be deposited with a proper officer in each County. The weights and measures in common use are then required to conform to these standards. But this is not the case in all the States. Thus in Iowa, which has the United States standards at the capital, the law providing for standards in the counties, and a sealer in each to take charge of them, is permissive only, and not mandatory. A majority of the counties have never applied for standards, and even in counties that have obtained them there has been only a temporary effort to secure uniformity in the manner

contemplated by law. The Hon. B. R. Sherman, Governor of Iowa, remarks on this subject: It is believed, however, that the inaccuracies resulting from this neglect do not "exceed those common in other States. The people seem well satisfied with the weights and measures in common use. The opinion seems to be that they are sufficiently accurate for ordinary use, and hence little effort is made to have them adjusted. But my information leads to the belief that the metric system is preferred by persons engaged in investigations that require strict accuracy."

The States of New York and Massachusetts have made the use of the metric system permissive by law.

His Excellency, the Governor of the Commonwealth of Massachusetts, has very kindly furnished us, by the hand of his private secretary, Mr. T. E. Major, an abstract of the records of that colony and commonwealth, giving copies of the orders of the General Court relating to weights and measures from May 18, 1631, down to date, including the most recent legislation upon the subject, copied from the public statutes of the Commonwealth enacted November 19, 1881. This abstract is so valuable and interesting as a matter of history that it is appended entire to this report.

Respectfully submitted,

[Signed]

JAMES S. LAWRENCE, Chairman.
GEORGE C. DAVIES,
H. M. ADDISON,
WM. H. SEARLES.

ADDITIONAL ITEMS AND REMARKS:

Arizona.	Small white beans 60 lbs., other beans 55 lbs., one ton 2000 lbs.
Dakota.	Broom corn seed 30 lbs., one ton hay, 2000 lbs. = 343 cubic ft. One perch masonry = 25 cubic feet.
Delaware.	Sifted meal 44 lbs., unsifted meal 48 lbs.
Georgia.	Peaches peeled 38 lbs., unpeeled 33 lbs., plastering hair 8 lbs.
Illinois.	Coarse salt 50 lbs.
Indiana.	State coal 70 lbs., imported coal 80 lbs., one bbl. beef or pork 200 lbs., one bbl. flour 196 lbs.
Iowa.	Herd grass seed 45 lbs., cherries 40 lbs., peaches and quinces 48 lbs.; no standards deposited in the county seats; raspberries and straw- berries 32 lbs., grapes, currants and gooseberries 40 lbs.
Kansas.	Plastering hair 8 lbs.
Kentucky.	Peanuts 24 lbs., plastering hair 8 lbs., one bbl. Irish potatoes 160 lbs.
Louisiana.	One barrel $3\frac{1}{4}$ bushels. Uses the <i>arpent</i> for land measure — 32,400 sq. feet.
Maine.	Uses the Winchester bushel.
Maryland.	Uses the U. S. standard "slightly modified" by Art. 32, Revised Code, 1878.
Massachusetts.	Cracked corn 50 lbs.
Michigan.	Orchard grass 14 lbs., State salt 56 lbs., dried plums 28 lbs., cranberries 40 lbs.
Missouri.	Orchard grass 14 lbs., red top 14 lbs., onion top buttons 28 lbs., green apples and pears 48 lbs., green peas in hull 56 lbs., one bushel coke or charcoal = 2680 cubic inches.
Montana.	Twenty-eight bushels = one ton of 2000 pounds.
Nebraska.	Plastering hair 8 lbs., one gallon strained honey 12 lbs., one ton = 2000 lbs., one bushel = 2150 cubic inches.
New Jersey.	Sugar cane seed 27 lbs., one bushel = 2150.42 cubic inches.
New Mexico.	Uses the old Spanish measures, the fanega, the almud and the cuartilla = 1 pint. The fanega = 4952 $\frac{1}{4}$ cubic inches; the almud = $\frac{1}{12}$ fanega. The U. S. standard also used.
Ohio.	Hominy 60 lbs.
Oregon.	Green apples and pears 45 lbs.
Pennsylvania.	Coarse foreign salt 85 lbs., coal at Pittsburgh 76 lbs., coal at Greens- burgh 75 lbs.
Rhode Island.	All berries 32 lbs., all root crops except onions 60 lbs.
Tennessee.	Peanuts 23 lbs., broom corn seed 42 lbs., dried blackberries 28 lbs., onion top buttons 28 lbs., charcoal 20 lbs., cement 80 lbs., green corn in ear with shucks, 100 lbs., dry corn in ear with shucks, 74 lbs., green apples and peaches 50 lbs., pears 56 lbs., blackberries, cucumbers, raspber- ries, gooseberries, quinces and strawberries 48 lbs., cherries with stems 48 lbs., cherries without stems 64 lbs., green peas in hull 30 lbs., green beans in hull 30 lbs., horseradish 100 lbs., cabbage 100 lbs., pieplant 100 lbs., cantelopes 125 lbs., plums 64 lbs., grapes 60 lbs.
Vermont.	Green apples 46 lbs.; one bushel charcoal, lime or ashes = $\frac{1}{2}$ bushel and $\frac{1}{2}$ peck; milk is sold by wine measure.
Virginia.	Red top seed 12 lbs., peanuts 22 lbs., chestnuts 57 lbs., unpeeled peaches 32 lbs.
Wisconsin.	Rape seed 50 lbs.
Nevada.	Buys and sells all grain and vegetables by the <i>arund</i> .

States not named have no arbitrary legislation relative to the bushel so far as heard from. All States and Territories use the U. S. standards, except as noted above.

GENERAL COURT RECORDS, VOL. I.

A Gen^ll Court holden att Boston the 18th day of May, 1631.

It is ordered, that every plantacon within the lymitts of this pattent shall before the last day of June nexte guide comon measures & waights, w^{ch} shalbe made by some that the Gouv^r hath already sealed, & by w^{ch} also all others that will have waights & measures of their owne are to be made

JUNE 3, 1635.

It is ordered that evry towne within this jurisdiccon shall provide a pecke & a bushell, as also for waights a quart^r, halfe a pound, 1, 2, 4, 7, & 14^l, as also a meate yard, all to be made by the standard att Boston, & sealed by James Pen, the marshall, before the Genrall court, in Septembr, under the penalty of fforty shillings for evry defect

MARCH 12, 1637 or 1638.

The m^rshall, taking wth him a cowper, shall wth convenient speede, give notice to the constable of every towne to require all the inhabitants there to bring their measures & weights to a certain place, & at a certaine day; & then, wth the assistance of the said constable, hee shall try all the said measures & weights, & make them even, & so set a seale upon them; & for his paines hee shall have of the owner of the weight or measure two pence for evry measure, & a penny for every weight or yard, that is defective or too great; & if any weight or measure bee so defective as hee cannot amend it, hee is to breake or deface it; & whosoever shall sell by any other weight or measure, hee shalbee punished by the discretion of the Court wheare it shalbee complained of

VOL. 2.

OCTOBER 30th, 1644.

It is ordered, y^t the two form^r ord^rs made by this Co^rt, the one of the 3th 4th m^o 1635, the oth^r of the 12th first m^o, 1637, conc^rning weights & measures, shall still remaine in force, & from year to year shalbe put in execution by the marshall, &

that w^{thin} one month next ensuing hee is required to put the said ord's in execution for this present year.

11 NOVEMBER 1647

To y^e end measures & weights may be one & y^e same throughout y^s iurisdiction, it is ord^ded, by y^e authority of y^s Corte, y^t w^{thin} one month aft^r y^e publication hereof, y^e auditor gen^{all} shall guide, upon y^e countrie's charge, such weights & measures, of all sorts, as are hereaft^r expssed, (for a continuall standerd, to be sealed wth y^e countrie's sealer) viz, one bushell, halfe bushell, one peck & halfe peck, one ale quart, one wine pint, one halfe pint, one elle & yard, as also a set of weights of brasse, to 4^{lb}, w^{ch} shalbe aft^r 16 ounces ye pound, wth meete scales, steele beame to weigh wth all: & it is furth^r ord^ded, by y^e authority aforesaid, y^t y^e cunstable of ev^{ry} towne w^{thin} y^s iurisdiction shall, w^{thin} 3 months aft^r y^e publication hereof guide, upon y^e townes charge, at y^e least of leade, or such like, all such weights & measures as are above expressed, tryed, & measured, by y^e countrys standert, & sealed by y^e auditor gen^{all}. (to be kept & used onely for standerds for their sev^{all} townes, who is hereby authorishd to do y^e same, who shall receive, from y^e cunstable of each towne, 2^d for ev^{ry} weight & measure so proved & sealed, & y^e said cunstable of ev^{ry} towne shall comit these weightes & measures to y^e custody of y^e select men of their towne for y^e time being, who are hereby enioyned, wth y^e cunstable, to choose, out of their numbr, one able man to be y^e seal^r towne fro^m time to time, & till anoth^r be chosen, whom they shall prsent at next County Corte y^r to be sworne to y^e discharge of his duty, who shall have pow^r to send forth his warrant, by y^e cunstable, to y^e inhabitants of the towne, to bring in all such measures & weights, (as they make use of,) in y^e 2^d mo, from yeare to yeare, at such time and place as he shall appoint, & make returne to y^e sealer in writing of y^e psons so sumoned, y^t y^r & y^r all such weights & measures may be pved & sealed wth y^e townes seale, as in y^e ord^r for towne matt^{rs}, pvided by y^e constable, at each townes charge, who shall have, for ev^{ry} weight & measure so sealed, 1^d from y^e own^r y^r of at y^e first sealing; & all such measures as cannot be

brought to y^e iust stand^t, he shall deface, & afr y^e first sealing to have nothg, so long as they continue iust; & y^t none may neglect their duty herein, it is y^rfore ord^d, by y^e authority aforesaid, y^t if any cunstable, select men, or sealer, shall neglect to execute y^s ord^r, they shall forfeit, to y^e comon treasury, 40s for evry months neglect; & also evry pson neglecting to bring in y^r weights, at y^e time & place appointed, they shall pay 3s 4^d, one halfe to y^e seal^r, who shall have pow^r to levy y^e whole by distres, & pay y^e oth^r pt into y^e comon tresury.

VOL. 3.

MAY 18, 1653.

The question beinge put, whether one chose for pruing of weights and measures, being a select man when chosen, and being left out the yeare followinge, may not yet remayne in y^e place aforesd, it was resolved in the affir.

VOL. 5.

OCTOBER 15, 1679.

As an addition to the law, title Weights & Measures, this Court doeth order, that the country Treasures doe provide, upon the country chardge, these further brass weights ffollowing, viz^t, one seven pound weight, one fowerteene pound weight, one twenty eight pounds, & one fuetty sixe pounds, which shallbe after sixteene ounces to the pound, wth fitt scales & steele beame, to weigh and try wth all; and the constables of every toune, wthin this jurisdiction, where such weights are frequently used, shall, wthin sixe months after publication hereof, provide, upon the tounes charge, all such weights, at least of lead, to be trjed & sized by the country standards, & sealed, kept, & used in the severall tounes as standards, & improved by y^e select men & constables as the law directs for smaller weights.

MAY 20, 1680.

"It is ordered by this court & the authority thereof, that henceforth the new measures that are now come ouer from England by M^r Foy shallbe the standard for this colony of the Massachusetts, which sajd measures are of bell metle, the halfe bushell and the pecke for measuring of corne & other grajne, &

salt, &c; also one quart and one pint, for beere or ale, w^{ch} are attested to by Daniel Man, keeper of the Guild Hall of the city of London, yeoman of the chamber thereof, & sizer and sealler of the weights & measures to be just and right, according to a statute for measuring called Winchester measure, together wth a standard of brasse, to size a yard and ell; and also one gallon, one quart, and one pint, being wine measures, according to the custome of London, and that all halfe bushells & bushells shall be sized by this halfe bushell, and all other measures shall be sized by these other measures before expressed, and the country Treasurer issue forth his warrants forthwith to the constable of euery toun in this colony, to bring in all the old standards of the seuerall townes to whom the Treasurer shall order, to be sized by the new measures now allowed and approved of by this Court." &c. &c.

[17 March] 168½.

It is ordered by the Court and the authority thereof, that henceforth the new brasse weights that are lately come from England, & haue bin sealed at the Exchequer in Westminster, as appeares by a writing testimonial under the hand of Mr. Jⁿo. Law @ Mr Nicholas Stuart, principall officers there, and seale of the sajd office, are just and true averdupojce weights, such as are used in London, diuers of which are fell fashioned, vis^t, one fuetty sixe pounce, one twenty eight, one fowerteene, one seven, one fower, one two, @ one one pound, the rest are flatts weights, and are one halfe pound, one quarter, one eighth part, and one $\frac{1}{8}$ or ounce, as also one halfe ounce, one quarter of an ounce, one eighth @ one sixteenth part of an ounce, shall be the standards for this colony of Massachusetts, by which all other weights are to be sized, and that the country Treasurer issue forth his warrants forthwith to the constables of euery toun in this colony to provide, at the townes charge, all the abouesajd weights of brasse or lead by the tenth of May next, which are to be brought in to the sajd Treasurer, or whom he shall appoint, to be sized and sealed by the aforesajd weights; and henceforth it shall not be lawfull for any person to buy or sell by any other weights or styljards but such as are sealed by

or made agreeable with the aforesaid standards; and the penalty of such as neglect or act contrary to this order shall be the same, and disposed of according to the order of this Court made in May, 1680, title Measures.

THE PUBLIC STATUTES OF THE COMMONWEALTH
OF MASSACHUSETTS,

ENACTED NOVEMBER 19, 1881, TO TAKE EFFECT FEBRUARY 1, 1882.

CHAPTER 65 OF WEIGHTS AND MEASURES.

SECTION 1. The weights, measures and balances received from the United States and now in the treasury of the Commonwealth, to wit, one-half bushel, one wine gallon, one wine quart, one wine pint, one wine half pint, one yard measure; a set of avoirdupois weights consisting of fifty, twenty-five, twenty, ten, five, four, three, two and one pounds, and from eight ounces down to one drachm; one set of troy weights, from five thousand pennyweights down to half a grain, and from one pound down to the ten-thousandth part of an ounce; and three sets of balances; also the measures caused to be made by the treasurer and now in the treasury, to wit, one of eight quarts, one of four quarts, one of two quarts, and one of one quart, dry measure, shall, except as provided in chapter sixty-six, be the sole authorized public standards of weights and measures.

CHAPTER 66 OF THE METRIC SYSTEM OF WEIGHTS AND MEASURES.

SECTION 1. The weights and measures of the metric system may be employed and used in this Commonwealth, etc., etc.

LETTERS.

SHARON, PA., February 7, 1885.

Dear Sir:—There appears to be a remarkably close relationship between Anglo-Saxon, ancient Hebrew, old Egyptian and Pyramid metrology. The fountain of ancient measures was probably the cubit AMMAH—"mother"—derived from the circumference 1,296,000, of which the radius is 2,062,648. One ten-thousandth of this radius is 20.62648, and one ten-thousandth of one-fourth of the inscribed square is .7292. An old Egyptian cubit in the museum at Turin is 20.611 inches. It is divided into twenty-eight digits; three of them at one end (for some special purpose, probably to indicate the quadrature of the circle) are longer by three inches than any three of the others, which measure .729 inch each. The ancient digit is thus identified with one ten-thousandth of one-fourth of the side of a square inscribed in a circumference of 1,296,000.

The Hebrew gold talent was equal to 10,000 Persian darics, and the daric was the thirty-six-hundredth part of the Babylonian talent. A half talent Babylonian, discovered by Mr. Layard at Nineveh, and well preserved, weighs 233,300 grains, giving 466,600 grains for a talent. One thirty-six-hundredth of this is 129 6100 grains, or one daric, equal to a Hebrew shekel. Dr. William Smith says the daric was about 129 grains. I think, therefore, we may safely assume that the standard Hebrew gold talent of 10,000 shekels contained 1,296,000 grains.

It was a custom of the Hebrews to call their measures by descriptive names. Thus "talent" meant *circle*, and "gerah" meant *a grain*. It appears also to have been their custom to express the relative numerical value of a measure by its name, thus sheah, which means a third part, was the name of a measure equal to one-third of the bath. The smallest of Hebrew measures of liquids or grain was the log, about an English half pint. The bath contained seventy-two logs. Other measures were derived from the log or the bath by multiplication or division, thus:

1 bath	=	72 logs.
1 homer	=	10 × 72 logs.
1 omer	=	$\frac{1}{10}$ of 72 logs.
1 sheah	=	$\frac{1}{3}$ of 72 logs.
1 hin	=	$\frac{1}{2}$ of $\frac{1}{3}$ of 72 logs.
1 cab	=	4 logs.

A similar division by tenths, halves, thirds and half-thirds, obtained in Hebrew coins. If the exact capacity of the log or the bath were known, the other measures could be determined. The numerical expression for the word BaTh, is B 2, and Th 400, or 2×400 ; omitting the ciphers it becomes $2 \times 4 = 8$. The numerical expression for the word log is 30 × 3; omitting the cipher it becomes $3 \times 3 = 9$. But the bath equals 9×8 logs. If nine logs equal a standard of reference, the bath must be eight times that standard. According to the Rabbinites and Dr. William Smith's computation, the log contained .6615 imperial gallons (10 pounds or 70,000 grains of water being the capacity of one such gallon) equal to 4,305 grains. Now, a digit being .7292 inch, 10,000 cubic digits are 38,783 inches, and $\frac{1}{4}$ of this is 4,309, which, taken in grains weight of water, is but four grains in excess of the weight of the log as computed by Dr. Smith. I think, therefore, we may reasonably assume that the Hebrews used 10,000 cubic digits,

equal to 38,783 cubic inches, as a basal number or standard of reference for their measures of capacity, taking one-ninth of this standard in grains for the log and eight times the standard for the bath.

Another method, however, may have been adopted which would give results but slightly different. The coffer in the Great Pyramid contains, below the ledge, 40 cubic feet. Let

$$\begin{aligned} 1 \text{ coffer} &= 4,000 \text{ logs.} \\ 100 \text{ logs} &= 1 \text{ cubic foot.} \\ 1 \text{ log} &= 17.28 \text{ cubic inches.} \\ 17.28 \text{ inches} &= .625 \text{ imperial gallons.} \end{aligned}$$

This is not quite so close to Dr. Smith's computation as we come by means of the digit. The following are the comparative results of the three standards when applied to the cor or homer, which is the largest of Hebrew measures:

$$\begin{aligned} 1 \text{ cor or homer} &= 10 \text{ baths} = 12,276 \text{ inches} = 44.286 \text{ gallons, Rabbinist standard.} \\ 1 \text{ cor or homer} &= 10 \text{ baths} = 12,277 \text{ inches} = 44.323 \text{ gallons, digit standard.} \\ 1 \text{ cor or homer} &= 10 \text{ baths} = 12,441 \text{ inches} = 45 \text{ gallons, coffer standard.} \end{aligned}$$

The difference is so little that it might be difficult to substantiate an indisputable preference for one above the others, nevertheless the comparison affords strong ground for the belief that ancient Hebrew weights and measures not only stood in close mathematical relation to one another, but were coincident with Pyramid metrology. Now, "cor" means "round," and "homer," which is another name for the same measure, means "heap," that is, the two names together signify a round heap. A cone of wheat corn equal to the measure of the cor, has a base diameter of $50 \pm .1$ inches, the angle of rest being 37° according to Haswell. If we take as the unit of measure $\frac{1}{16}$ in. = $\frac{1}{16}$ of the length of a second's pendulum at the Pyramid, the base of the cone is 800, the height is 300 and the sloping side is 500 sixteenths. The proportions of the height, slope and half-base, 3, 5 and 4 will be recognized as the sides of a commensurable right angle triangle. Grain could be bought and sold by the cor with practical accuracy without a balance or measuring basket.

The facts have been noted touching the numerical relation of Hebrew weights and measures, and the numerical signification of their names may give the key to the entire construction of ancient Hebrew metrology. A thorough investigation of these aspects of the subject by some capable Hebrew scholar would be likely to lead to exceedingly interesting and valuable results.

H. G. WOOD.

LETTER FROM HON. FREDERICK T. FRELINGHUYSEN.

DEPARTMENT OF STATE, WASHINGTON, January 29, 1885.

TO THE PRESIDENT OF THE INTERNATIONAL INSTITUTE FOR PRESERVING WEIGHTS AND MEASURES, CLEVELAND, OHIO:

Sir:—I herewith transmit the enclosed extract from a dispatch from Mr. N. D. Comanos, United States vice consul general at Cairo, No. 2, of the fifth instant, showing the conditions upon which the government of Egypt will grant you authority to explore the pyramids of Ghizeh and the Sphinx.

I am, sir, your obedient servant,

FRED'K T. FRELINGHUYSEN.

Enclosure—Extract of dispatch mentioned:

AGENCY AND C. G. OF THE U. S. OF AMERICA, CAIRO, January 5, 1885.

HON. F. T. FRELINGHUYSEN:

Sir:—It is to be understood that all the objects discovered by the explorer in the course

of his excavations should be given up to the Boulac museum; it is further indispensable that he should come to an understanding with the administration of antiquities for the object of deciding upon the limits of ground upon which he desires to dig. The same condition also applies to a depot to be fixed upon, for the purpose of accumulating upon the same the sands and the earth resulting from such excavations, the mass of which will evidently be considerable, for, it is feared, that, unless the advice of the antiquarians be not previously secured, the "debris" may cover some tomb or important monument. The same necessity is also imposed in leaving intact any portion of ruins, or any part of a wall, even insignificant, which might, notwithstanding its small importance, be the result of the disappearance of ruins belonging to the Greek, Roman and Byzantine epochs. It would, hence, be desirable that the service of antiquities be duly advised and consulted.

The Egyptian government trusts that the explorers will thoroughly understand the motives of such reserves, and will, consequently, appreciate their importance so far as the science is concerned, and under these conditions it grants, with great pleasure, the authorization solicited. The minister further adds, in one of his dispatches, under date of twenty-fifth December, 1884, that a decree or a firman is not necessary to permit the gentleman named to start upon the studies which he purports carrying out in Egypt. A simple authorization of the council of ministers will suffice in order to facilitate him in the accomplishment of the mission with which he has been entrusted. And, as soon as this agency will announce to the Egyptian ministry the arrival here of the exploring party, the necessary authorization will duly be transmitted to this office.

I have the honor to be, sir, very respectfully, your obedient servant,

N. D. COMANOS,
U. S. Acting Consul General.

LETTER FROM COL. S. M. CHESTER.

ELIZABETH, NEW JERSEY, February 19, 1885.

Dear Sir:—In the January number of your excellent magazine I observe that my name is honored by being added to the list of members of the "committee on weights and measures," and from Mr. Clark I learn that the several members of the committee are each assigned to a special department, and that I will probably be expected, at some future time, to report upon "units of electric measurement."

While I accept with pleasure the appointment, and with full determination to grapple with the duties zealously, I may be permitted to suggest that I conceive that serious practical objections exist to the independent, separate action of several persons, each in a separate department, entrusted with the arrangement and preparation of units of measurement, and terms of expressing the value of many different modes of action, all of which have in fact exact correlations, although the scientific (?) nomenclature of the day affords no sufficient or appropriate terms by which such correlative values can be expressed. The inconvenience, perplexing and illogical nomenclature alluded to, has doubtless come into existence by reason of such separate and independent action of scientists in separate departments. The electricians of France, with an amount of self-complacency and assurance equally displayed in the efforts of their compatriots to force upon the world French conceptions of the measurement of physical matter, have *invented* a system of quite arbitrary terms for expressing the value and condition of electric action. But, it is to be observed, that the several units herein employed have no relation to, nor connection with any of the units employed by themselves or by any other nation in measuring.

I desire to explain as clearly as I can my reasons for believing that it is of paramount importance that the members of the committee should work conjointly and not independently in separate paths. Permit me, then, to make a brief resume of what I have before on diverse occasions expressed more fully. I submit the following propositions, which I conceive to be self-evident truths:

First—"Different forms of force," is but an expression denoting different "modes of action," or different ways of exhibiting, employing, or utilizing "force," which is the *perfected condition of action*.

Second—One kind of action, or use of "force," has an exact equivalent in another kind of action or other way of exhibiting force. Or, "there is correlation between forces."

Third—An action cannot be even described in the abstract, but only can it be made apparent, and its value estimated, by estimating and describing its effects upon visible, measurable, physical matter.

Fourth—The description of such effect is insufficient if made in one term. It cannot be measured by the application of one unit. Motive action cannot be completely described by saying a pound is moved.

Fifth—At least three classes of measurement, each employing a unit of different character, must be employed to estimate such effect, namely: *quantity* of matter affected, extent of effect, energy of effect. In movement, we state the amount of matter moved, first unit; the distance moved, second unit; the velocity or energy of movement, third unit.

Sixth—As three terms must be used to express value of one action, its exact correlative in another action must correspond in each of these terms. Let "a" represent quantity of affected material, "b" extent, etc., "c" energy or velocity, and let an electric or heat force be thus described: *4a, 2b, 1c*. Motion, *2a, 4b, 1c*, is not its exact correlative, although in expressing two conditions of the same action, *4a, 2b, 1c*, is the exact equivalent in *value* to *2a, 4b, 1c*.

Seventh—In expressing a degree of motive force we do not express each of the several conditions in direct terms. For instance: "Energy," or velocity, is expressed by a double measurement, "so many feet moved in a minute." Exactly similar terms may not be used to describe heat, or electric energy, though we may very clearly express an amount of heat force by describing the amount of material affected, extent of effect (to what degree), time in producing such effect.

Eighth—It is desirable that we should be able to exactly express, in similar terms, the amount of material affected, extent of effect, energy of effect, whatever kind of force acts upon it.

Excuse my long letter—not long enough perhaps to clearly enunciate the several points I have attempted to call your attention to, but my purpose will be served if you agree with me that we cannot labor independently.

I am yours, very truly and sincerely.

S. M. CHESTER.

LETTER FROM COL. A. T. FRASER.

TRICHINOPOLY, MADRAS, INDIA, January 20, 1885.

C. PIAZZI SMYTH, ESQ.:

My Dear Sir—While spending a Sunday on the way to the Neilgherry hills at the small native junction town of Erode, on the Madras railway, I asked if there was any church, and was told there was a Roman Catholic chapel. I went and found one of the ordinary domed plan, in a dilapidated state, in a small shrubbery in the heart of the town. There was a native priest, a tall, stout built individual, walking up and down a footpath. I

spoke to him, and got into conversation. He was a Mysore Brahmin, knew English moderately well, but not only understood how to read, but spoke Latin fluently, and said he wrote all his letters in it on church affairs. He took me into his house, which was unlike anything a native ever lives in, having European furniture, and everything tidy, with books and writing desk, an astonishing proof of what education can accomplish. I asked him what the Catholic Church teaching was as to the future of Jerusalem, and he said the Jewish temple was destroyed, and its organization gone forever. No, I said, and asked for the Latin Vulgate, and turned to the chapter in Revelation about the "holy city they shall tread under foot," the temple of Ezekiel will be rebuilt. I asked who he thought the two witnesses were, and the reply was that, without a doubt, they were Enoch and Elijah, whom the church expected to appear before the end, they having never died. They were alive now, not "*in corpore nec in inferno*," but where they existed no one knew. It was extraordinary, falling in with a native who could talk Latin as if it were a modern tongue, and he had to eke out his explanations to me in the language, not having enough command of English.

I have recommended Erode to Professor Michie Smith as an excellent place to test the green sun through steam, as there are always powerful engines there with steam up at dawn, and the sun always rises in a clear sky.

I see in Nature for December 4, strong remarks by Sir William Thompson in favor of the metric system. It is possible metric is used by British men of science in place of "decimal" system almost without thinking. Of course, for many engineering purposes in the measurement of small and very large areas, tenths are best, but for anything in the shape of architectural or structural design, inches and eighths are indispensable. In chemistry I take some trouble to change the French weights I meet into familiar grains. Sir William was also very decided, you will have noticed, in the same paper, on the reality of the luminiferous ether. His mode of accounting for matter going through it differs from mine, but I can hardly take to task so great a philosopher.

I have observed in last newspapers the death of Major J. Scott Phillips, from whom I had a letter dated the fifteenth of August last on the subject of the valley to be formed by the great earthquake at Jerusalem when the Mount of Olives was to be cleft in twain, and his idea about the "beast from the sea." I had hoped to have heard more from him, but V GBR IMUT V ICHLSH, V IGUY ADM V AI U, "and strong man will die and be overthrown, and man will expire and where is he?" Job, xiv. 10.

I am yours sincerely,

A. T. FRASER.

EXTRACT OF LETTER FROM PROF. C. PIAZZI SMYTH.

That England should have the aid of her daughter in her present wars and complications, is a very kindly sentiment on your part, you typifying the United States of America as her "daughter." But it strikes me she is more—more on an equality; and as I have nowhere seen any political and national theory better proved by every successive year's history than Mr. Hine's view that the Irish, the Milesian Irish of the west and south, are descendants of the Canaanites whom Joshua spared by mistake, and who were, therefore, left by God to be pricks in the eyes and thorns in the sides of the Israelites ever after, so do I believe that the United States of America, *i. e.* the Yankees, with their tall stature, do represent the elder, aristocratic son of Joseph, Manasseh, and Britons, the worldly, better-to-do and fatter, stouter, shorter, second son, Ephraim.

During the process of fixing themselves in the new world, the Manassehites have had to rough it exceedingly, but now that they are fixed, they are coming hand over hand with

us in refinement of dress, refinement of electrical apparatus, refinement of publications in government observatories, grandeur of astronomical instruments for beholding the glories of the heavens, so that by the time that the times of the Gentiles are fulfilled, Manasseh will be patent to all the world as the elder brother, and Ephraim, spite of having royalty within his bounds, as the younger.

You have got some kind of leave, license, or authority through your consul general at Cairo to examine Great Pyramid.

So far, very good. In theory an excellent beginning; but take care how you enter into it practically. If you could take a whole army corps with you, the whole thing would be plain before you. But two, three, or a dozen scientists of moderate incomes would find themselves opposed at the place to the vested interests of two or three hundred noisy, impudent Arabs, whose whole support in life is derived from extravagant fees and remnants of luncheons given by the endless crowds of "travelers" who go out there day by day, and who, moreover, would, for the most part, join the Arabs, and insist that the Great Pyramid is theirs. Even the British consul (of Alexandria) said to us, in most discontented tone, "Can't you go and measure some other pyramid, and not interfere with the parties of visitors to the Great Pyramid?"

Then, as to your measuring apparatus. I was right glad to read in the *Cleveland Plain Dealer* that the institute was getting a first-rate steel scale, and microscopic comparator from so eminent a scientist in that line as Professor Rogers. For instant microscopic and micrometric accuracy nothing could be better. But for all time, or to replace the Great Pyramid, and its four thousand years, who can guarantee a steel rod keeping its length? Newton pointed out, before measures were very refined, that a steel bar, hammered in manufacture, relaxes at rest; and then where are you? But cannot you get Professor Rogers to put his infinitely fine graduation on some anti-hygrametric, hard stone, Brazilian "smoky agate," if you could get one large enough: chalcedony next, after that porphyry or granite, as hard material; and black marble as the least expensible from heat.

Yours very truly,

C. PIAZZI SMYTH.

EXTRACT OF LETTER FROM THEODORE GRIBI.

I have taken a great liking to Pyramid studies. I think the whole matter of its existence and preservation, its wonderful proportions and commensurabilities a theme of extraordinary inspiration. There is a wonderful weight of meaning in one of R. A. Proctor's expressions concerning it, "that the Great Pyramid will be in its youth (or remain) when every other structure of human origin shall have disappeared from the face of the earth"—something to that effect, I do not remember the exact wording—and I think there is more in that testimony than Proctor himself meant; why, therein lies the whole meaning and intent of the architect and builder.

I have very much enjoyed your articles on the "Unveiling of Isis." There is something extraordinarily fascinating, if not convincing, in the coincidences you make; everything is so plausible, and I am not one who doubts for a moment that in God's eternal purpose this nation is a provisional factor, but I am of opinion that that kingdom which Jesus Christ is going to establish on earth has not yet appeared in substantial form, and will not, until He comes. There is something so radically wrong in our social and political institutions, and this social wrong is so deep-seated and time-honored that nothing short of a divine manifestation will convince the world of it. I cannot believe that a government under which such dire poverty and destitution crawls alongside luxurious affluence in proportions beyond arithmetic, a government which is manipulated often by tricksters and wily politicians, who work only for the spoils of office, can be in any sense

the government of Jesus Christ. Nor is there any other government on the face of the earth besides this fitted for the appellation. Yes, the principles of liberty, justice, and equality are there, if you please, and must have been in the hearts of the founders of this government; but those principles have never been in operation fully, and we are receding from the realization of them in the exact proportion as time separates us from the fathers. Everything must have a beginning, however, and God's eternal purpose on earth has a history. That you have traced that history in the pages of your "Unveiling of Isis" can scarcely be a matter of doubt to a believer, and that God may intend something more with this nation than has hitherto appeared is "devoutly to be wished." At any rate, I willingly and humbly subordinate my judgment in the matter to yours.

THEODORE GRIBI.

LETTER FROM JACOB M. CLARK.

119 Liberty Street, NEW YORK, February 27, 1885.

Sir:—A few days ago I received from Rev. Mr. Wood, some explanations as to the markings on the "Turin Cubit." While waiting for Mr. Wood to answer as to more exact statements as to the dimensions to certain points which I conceive to be fundamental, I will explain frankly to you where I think the index is.

The "Turin Cubit" is, as to its whole length, a Babylonian dimension; 20 $\frac{1}{2}$ British inches or so. We see at once, that according to the idea of Babylon, it is not cosmic. It simply lands us in an error of about 500 miles as to the circumference of the earth, and does not relate to the radius in any simple way. But, on the other hand, if we conceive that while the total dimension is Babylonian, the markings are Egyptian and Hebrew, we can see at once that the mathematician who marked this implement, used such markings to impress on the minds of the workmen.

- I. The circle is divided into 24 parts.
- II. The final number of the cubit is 25.
- III. The modulus is the pyramidal inch and the sacred cubit.
- IV. The measure of the Temple is a perfect measure—"according to these measures."

Truly yours,

JACOB M. CLARK.

TRANSACTIONS OF THE OHIO AUXILIARY SOCIETY OF THE INTERNATIONAL INSTITUTE.

JANUARY 28, 1885.

Eli Baldwin, Niles, O., Richard Bull, Hamilton, Ont., J. G. M. Hirsch, Vandalia, Ill., Gustav Vogelsang, San Marcos, Tex., were elected members.

Letters were read from Cockburn Muir, of Melrose, Scotland; Charles Casey, Carlow, Ireland; F. Gass, Reigate, England; Miss Agness Menzies, Edinburgh, Scotland; J. Hirsch, Vandalia, Ill., and C. A. L. Totten. The President then spoke of the loss the society had sustained by the death of Hon. John B. Jervis, C. E., one of the most earnest members. One of his earlier letters, expressing his deep interest in the society, was read. Mr. Jervis was a distinguished civil engineer.

The circular of the Rev. H. G. Wood, Chairman of the Committee on Weights and Measures, was read, discussed and approved. On motion of Mr. A. M. Searles the names of Prof. W. A. Rogers, Professor Stockwell and Colonel Stephen M. Chester were added to the committee.

A paragraph from the Messenger entitled "The Astronomical Day," was read. "Shortly before midnight on the 31st ult. the authorities at Greenwich made preparations to receive the year 1885. The public clock was so altered that instead of indicating twelve hours when the neighboring clocks were striking that number it pointed to 0, thus showing that the astronomer royal had taken the necessary steps for adopting the universal time. This change will render the astronomical day coincident with that of the civil day." After this subject had been discussed Mr. W. H. Searles read and illustrated upon the blackboard a proposition of Mr. Jacob M. Clark, and also read criticisms upon it from Mr. J. H. Dow.

Mr. W. E. Bond's paper upon weights and measures was then read by the President. In the discussion upon it Mr. A. M. Searles stated that he considered Mr. Bond's proposed system to be both simple and practicable. We will present the main features of it in a subsequent paper.

Mr. F. Gass, of Reigate, England, sent a criticism upon Mr. Flinders Petrie's recent work. Mr. Gass' article is entitled "The New Measure of the Great Pyramid and the Sun Distance," and like the papers of Rev. H. G. Wood and other members goes to prove that the full force of Mr. Petrie's stroke will rebound upon and injure no one but himself. Indeed, that his measures will ultimately be of great assistance to all true believers.

A model sent by Rev. H. G. Wood representing the theory of connection between E. N. E. trench of the pyramid and summer solstice B. C. 2170 was examined. It can be tried by sunlight or gas light. And is so constructed that a difference of 10m. in the sun's altitude can be readily detected by the change of the solar shadow upon it.

The mission of Edward Hine to America, and the feasibility of inducing him to lecture in Cleveland at an early date, were discussed after an animated debate upon the Pyramid and British inches.

FEBRUARY, 11, 1885.

Mr. A. M. Searles, Vice-President of the Ohio Auxiliary Society, presided. An interesting letter was read from a resident of Cairo, Mr. P. F. Boulad, who gave his ideas as to the motives, origin and probable consequences of the insurrection in Egypt, and of the career of Arabi Pasha. A letter was then read from the Secretary of State. He en-

closed an extract from the letter of Mr. N. D. Comanos, United States Acting Consul General at Cairo, in response to the application of the International Institute for a firman to explore the pyramids of Ghizeh and the sphinx.

Mr. G. L. Heisel read a communication from J. K. Hornish, Denver, Colorado, a criticism upon Mr. Faber's π proportion. Mr. Hornish says: "The true π proportion between diameter and circumference of the circle is the prime necessity in all geodesy, astronomy and mensuration. Until this π proportion is discovered, mathematics cannot have a philosophy; and numbers and structure as God has built them into cosmos cannot be formulated into true table of weights and measures." Mr. Hornish then gives five formulæ of the π proportion: 1, the Archimedes π ; 2, the metrics π ; 3, the Parker π ; 4, the Faber π ; 5, the Hornish π . The first three, Mr. Hornish says, are admitted to be "incommensurable and infinite." Mr. Faber claims his proportion to be finite, and the same claim is made by Mr. Hornish for his own discovery.

The views of the writer were opposed by Mr. W. H. Searles and Mr. Shongo. Mr. Heisel defended Mr. Faber's solution.

A letter from Rev. H. G. Wood was read, showing clearly the connection between the ancient Hebrew measures, the Anglo-Saxon measures and the coffer of the Great Pyramid. The demonstration contained in the letter was placed upon the blackboard and explained by W. H. Searles.

FEBRUARY, 25, 1885.

G. A. Hammond, of Kingslear, New Brunswick, Canada, and Mrs. A. E. Waters, Cleveland, were elected members. Vice President A. M. Searles occupied the chair. A paper received from Egypt stated that by order of the Egyptian government the midday gun was fired by Great Pyramid time.

C. C. Schenck, of Allardt, Tennessee, wrote repudiating the idea that the Great Pyramid could have anything to do with modern weights and measures, and suggests that the advocates of that theory should extend their opposition to federal money and Arabic figures and notation.

Reverend James French, of Philadelphia, wrote respecting the present condition of affairs in Egypt, and their fulfillment of prophecy.

The correspondence between Professor R. A. Proctor, astronomer, and Dr. John Forrest, of Charleston, South Carolina, was then read. Dr. Forrest wrote to the editor of the *Charleston News and Courier* stating that in his lecture entitled "Into the Star Depths," Professor Proctor had made the false statement that Piazzi Smyth had predicted that the world would come to an end in 1882. Proctor replied that he had said "the Christian dispensation, and with it, I presume, the end of the world, was to come to an end in 1881—the date being subsequently deferred to July, 1882." In proof of this assertion he quoted Professor Smyth's words in "Our Inheritance in the Great Pyramid," and also said that Professor Smyth hailed the comet of 1882 as portending the close of the Christian dispensation. Dr. Forrest rejoined that Mr. Proctor had evaded the point, and that no one who read Professor Smyth's works with ordinary attention could confound his idea of the close of the Christian dispensation with the totally different idea of the end of the world. That moreover Mr. Proctor had said the same thing as long ago as 1879, in an article published in the *Contemporary Review*, and that Professor Smyth had replied in the *Banner of Israel* that he had not only not said that the end of the world was to take place in 1881, but had said he printed and published, and was still printing and publishing the opposite. Professor Proctor replied that he had not read Piazzi Smyth's words in the *Banner of Israel*, as he regarded that very remarkable periodical as unsuitable reading for sane folks, but he imagined that only a very small section of the Christian world would accept the modified doctrine that the Christian dispensation came to a close in 1881 or 1882, or that the end of the world and the close of the dispensation might be sep-

arated by some considerable interval of time. He then said that he desired the controversy to close.

For the benefit of members unacquainted with Professor Smyth's theory Mr. W. H. Searles explained it by means of a large chart of the Pyramid, and showed how pyramidists believed that the various passages of the Pyramid symbolized different periods of time. The wide and lofty grand gallery referred to the Christian dispensation, and a low passage leading from it to the king's chamber signified a period of tribulation, on which Professor Smyth and others believed that we had now entered. Mr. Searles then explained Mr. Wood's theory with regard to the E. N. E. trench, and stated that Mr. Petrie had shown that the trenches corresponded to the passages in the Pyramid, as if the plan had been laid in them before the building was erected. There was one vertical trench for which no corresponding passage had yet been found in the Pyramid, and Mr. Searles suggested that it should be the work of the next explorers to discover that passage, which might lead to other passages and chambers now unknown.

Mr. Dow then explained with regard to the Pyramid and British inches that Professor Smyth and others across the Atlantic found the Pyramid inch and cubit in the measures. That he and others on this side of the water could prove with equal clearness from correlations that the British inch was there. He thought it not improbable that both could be found there. A discussion then took place on this subject, after which the meeting adjourned for two weeks.

MARCH, 11, 1855.

Thomas Bassnet, Jacksonville, Florida; J. A. Long, Akron, Ohio; Colonel T. M. Sanderson, Youngstown, Ohio, and F. B. Whittemore, Toronto, Canada, were elected members.

A letter from Professor C. Piazzzi Smyth referred to the total defeat of a Mr. Hamilton Smyth's proposal at the Institute of Civil Engineers, in London, to substitute French metric for English measures in civil engineering work.

Letters from Mr. Jacob M. Clark upon the Turin cubit, from Dr. John Forrest relative to his controversy with Professor R. A. Proctor, from J. K. Hornish on the value of π , and from Hon. N. P. Safford, giving a history of the elms by the old house where the Suffolk resolves were passed, were also read.

The remainder of the evening was devoted to the reading and discussion of a paper by Samuel Beswick, C. E., a member of the Committee on Weights and Measures, on "the metrology of coins or values."



EDITORIAL NOTES.

Through the kindness of Mr. Sauter, who recently visited Egypt, we have been presented with a small specimen from the coffer in the king's chamber in the Great Pyramid. It is of red granite. He has also specimens from the Temple of the Sun at Heliopolis, from Cleopatra's needle, and Pompey's pillar. Examination and comparison show that they are all of precisely the same material as the coffer in the king's chamber, that is, of red granite.

Our thanks are due Prof. C. Piazzzi Smyth for a copy of *The Egyptian Gazette*, published at Alexandria. It contains the following announcement: "Notice to Shipping—On and after Monday next, 19th inst., the midday gun will be fired from the signal station (Kom-el-Nadoura), by Great Pyramid time; the time ball will be dropped at local time, which will be 4m. 58s." later—Port Office, January 16th, 1882: In reference to this announcement, Prof. Smyth says "we are holpen with a little help even in the matter of time and its publication."

With reference to the report that action had been taken by the metric advocates to bring a bill before Congress for the compulsory adoption of the metric system in this country, we have heard from Hon. B. P. Bland that nothing has been done and that it is not probable that anything will be done in regard to this question at present. The committee have made no report on the subject.

As we have now the necessary authorization from the Egyptian government for the examination and exploration of the Great Pyramid and the Sphinx, we trust that our friends who have means will subscribe liberally to this object. It will be

remembered that one gentleman in this city proposed to give \$10,000 if others would agree to do likewise. If he will now place this sum in bank to be used for the exploration fund, it would be proper to start the expedition. Doubtless other subscriptions would follow. We ought to have not less than \$25,000 for the purpose. There are many points of vital importance to settle in order to arrive at a full understanding of Pyramid measures and chronology. Who will be the patron saint of the society in this matter? Friends, do not delay.

The ancient elms represented in the engraving of the "Suffolk Resolves" mansion, now standing in Milton, Massachusetts, acquired a historical and local significance in that part of the suburbs of Boston in which they were first and early transplanted. They were of the Dutch-English stock, and the fact of the circumstances of their transplanting being well known has probably contributed to enhance the interest in them as a favorite in that immediate locality, in addition to their massive strength and proportions and rich and enduring foliage. Many of these old trees have disappeared, yet a few remain as ancient landmarks at their first American home, and scattered in that vicinity. Those first transplanted here were brought from Brompton Park, England, in 1734, or soon after that, by Mr. James Smith, who then owned a fine estate in Milton, now in the ownership of Hon. James Murray Robbins, at Brush Hill, one of its eminent and venerable citizens. Coöperating with Mr. Smith at that period was Mr. John Jones, of Dorchester, the adjacent township. About the year 1762, at the instance of Mr. Smith and Mr. Gilbert Deblois, some of these trees, later known as the "Paddock Elms," were planted in Tremont street, Boston, near the site now occupied by the Park Street Church, where they grew and flourished for more than a century. Trees of this stock appear to have been transplanted as favorite ornamental forest trees upon several patrimonial estates in Dorchester and Milton, from the middle to the close of the last century. Few of them were privileged, however, to occupy so prominent a historic spot as that whence emanated the Suffolk Resolves, at the birthplace of the Revolution.

REVIEWS.

THE GREAT PYRAMID, A SCIENTIFIC WITNESS TO THE COMMON AUTHORSHIP OF NATURE AND THE BIBLE. A lecture by Rev. H. G. E. St. Dalmas, Poona, India. Pamphlet, 50 pp.

The Great Pyramid has long been a world wonder because of its mystery. It is a greater wonder than ever now that its mystery is being solved. In connection with recent discoveries and theories, it is interesting to know that Arabian writers in the ninth and tenth centuries have preserved a tradition which had come down to them from the ancients, that this Great Pyramid contained "all things that had been told by wise men; all recondite science of the stars, of arithmetic, of geometry, divers celestial spheres, and what they operate in their aspects, *what has been and what shall be from the beginning of time to the end thereof.*"

THE PLANETARY DISTANCES. By Lawrence McCurrick, author of 'Papers on Elementary Education,' etc.

The theories propounded in this work are in every sense revolutionary, and, therefore, will meet with much opposition. The variety of methods bringing out the same results, and the remarkable coincidences, which cannot reasonably be regarded as accidental, are strong presumptions in its favor.

While the cry is still for more light, this essay may in some measure tend to promote the spread of truth and the increase of knowledge.

THE TOWER OF EGYPT, OR THE TYPES AND CHRONOLOGY OF THE GREAT PYRAMID. By A. R. G. Illustrated by fifteen diagrams. Published by S. W. Partridge & Co., No. 9 Paternoster Row, London, England. 193 pp.

This little work has been prepared under the firm conviction that the Great Pyramid of Jeezeh, in Egypt, is the grand embodiment of the sacred types; that it was not a tomb for one of the Pharaohs, but was constructed under God's direction by

Shem, or one of the early Shemite patriarchs, as a stone witness to His decretive purposes on earth—of His providence with respect to the True Church; and that it is a prophecy extending from the flood to Christ's second advent, and possibly to the close of the world's history.

'THE MEETING OF THE NATIONS IN THE UNIVERSAL DAY.' By J. Leyland Feilden, author of 'The World, the Word, and the Branch,' and other works. Published by Robert Banks & Son, Raquet Court, Fleet street, London.

This pamphlet points out the juncture of Christianity and Islamism at Khartoum, Israel's return hastened thereby, and not far off. Egypt the land of the meeting of the nations, as seen in the many nationalities now met there together towards a final strife. The battle preliminary to something greater. Khartoum not the place of battle prophetically spoken of, but it will surge back to Cairo, be prolonged beneath the shadow of the Great Pyramid, be fought finally near the Holy City, Jerusalem, the great battle of Armageddon. The time will not be long in coming. The agony and blood-shed will be great, but the triumph will be greater; for then the saints will be truly seen, and assigned their proper places. There are many calculations proving the prophetic periods, and the grand and final events now drawing near. The author pays a gratifying tribute to the International Institute and its magazine, the INTERNATIONAL STANDARD.

We gratefully acknowledge the receipt from the publisher, C. H. Jones, of Chicago, of an exceedingly interesting work entitled, 'The Coming Age, its Nature and Proximity,' by J. P. Weethee, of Millfield, Ohio. The author has devoted many years of careful study and profound thought to the preparation of this work. It treats of topics which of late years have more and more commanded the profoundest study and interest of Christian thinkers. The writer believes that the great increase in knowledge, the rapid strides of modern inventions, in machinery, railroads, telegraphs, telephones, navigation, etc.,

coincide with the prophecies of God's work in showing the near approach to the grand consummation of the world's history, the coming of our Lord to establish His kingdom and millennial reign with His saints over the earth. He reviews the history of the earth from its first formation, through the six geologic stages of progress the past ages and dispensations, and God's government in their political and religious history, the fulfillment of prophecy, and His plans and purposes, brought out therein in those six past ages. The coming seventh age is to be ushered in by great geologic and atmospheric changes, to be purified and renovated by fire, for the reception of the church, the bride, and her bridegroom, the Messiah, the Second Adam.

It unfolds the meaning of Daniel's vision of the five monarchies, and the symbols and visions of St. John in the Apocalypse. Many passages are of thrilling interest. We commend the work as a valuable acquisition to any Bible student or thoughtful seeker of truth.

Prof. C. Piazzì Smyth has sent us a little pamphlet entitled, "The Two Witnesses:—The Bible—The Great Pyramid." The author, Mr. R. Courtney, of the Bombay Civil Service, takes up the chronological matters connected with sacred and secular history as shown in the Pyramid. He claims that the Scriptures and the Pyramid prove each other by the fulfillment of the prophecies of Daniel. We think that it will yet be clearly proved that the Pyramid contains an epitome of the history concerning our race. As we proceed in our investigations, our respect for the knowledge of the ancients in astronomy and all the sciences must increase. Events great and small are recorded in the Scriptures, as upon a parchment or scroll; in the Pyramid, the proofs of the truths of the Scriptures are written in the rocks.

We have received from Com. S. M. Franklin, a pamphlet, "Letter from the Secretary of the Navy, Transmitting Communications Concerning the Proposed Change in the Time for Be-

ginning the Astronomical Day." It contains a large number of interesting letters in connection with the recommendation of the change of the prime meridian, made by the recent International Meridian Conference held at Washington.

Our thanks are due Dr. W. F. Quinby for an ably written pamphlet entitled, "Silver." And to Prof. F. Hess for a copy of the *Fort Dodge Daily Chronicle*, containing his very interesting paper, "The Eclipse, from an Historical and Astronomical Point of View."

OUR REST AND SIGNS OF THE TIMES. Published monthly by C. H. Jones, 77 Clark street, Chicago, Ill. Terms one dollar per annum.

Our Rest is strictly undenominational, but is a firm advocate of the inspiration of the Holy Scriptures, and of salvation only through faith in the atoning sacrifice of Christ.

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THE GOSPEL ACCORDING TO ST. MATTHEW. Translated from the Greek text of Constantius De Tischendorf and other standard textual authorities. By Charles Gardner, M. A. Printed on extra heavy, tinted paper, elegant cloth binding. Post paid, only sixty cents.

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THE RESTITUTION. Issued weekly by the Christian Publishing Association, Plymouth, Indiana. Terms, two dollars per year, payable in advance.

The Restitution advocates the final "restitution of all things which God hath spoken by the mouth of all his holy prophets since the world began." As a means to this end, the establish-

ment of the Kingdom of God on the earth, with the Christ as King of kings, the restoration of Israel, the literal resurrection of the dead, the immortalization of the righteous, and the final destruction of the wicked, eternal life only through Christ, and many other kindred truths.

MONTHLY RECEIPTS FROM SUBSCRIBERS TO THE INTERNATIONAL STANDARD FROM JANUARY 31, TO MARCH 14.

FEBRUARY—J. H. Osborn, \$7; D. E. Shongo, \$2; Henry Kellogg, \$2; Professor Piazzi Smyth, \$4.14; Mrs. W. A. Plumptre, \$2.43; Eli Baldwin, \$2; James H. Moore, \$2.35; John E. Blunt, \$2; Dr. W. F. Quimby, \$5; Mrs. A. J. Waters, \$2; B. F. Morse, \$2; Mrs. E. B. Benjamin, \$2; E. C. Frisbee, \$2; G. A. Hammond, \$2; L. B. Mowry, \$2; W. W. Williams, \$10. Total, \$50.92.

MARCH—Ole Olsen, \$5; Lieutenant C. A. L. Totten, \$2; H. A. Powers, \$8; Rev. Joseph Wild, \$5; C. D. Whyte, \$2; Mrs. R. M. Hazard, \$2; Robert Potter, \$2; John Jay Laman, \$2; H. W. Oswald, \$2; Dr. H. R. Hurd, \$2. Total, \$27.

ERRATA.

Volume II, No. 2, page 191, last line, O. W. Kyle, Youngstown, Ohio, \$2.00. *Read* \$6.00.

International Standard, January, 1885:

"THE SARED CUBIT, ETC." JACOB M. CLARK.

Page 617—Seventh line from top of text, for "inch," *read* inches. Eleventh line from top of text, for "killogramme," *read* killogramme. Last line, for "polar," *read* semi-polar.

"COLONEL CHESTER'S REPORT AND ADDRESS."

On page 609, second and third line from top, *read*, While a correlative *motive* force is indicated by other units expressing measures of weight, distance, and velocity, as applied to matter affected. Eleventh line from bottom, *insert* the word *not* between the words "may" and "logically," making the sentence negative.

THE
INTERNATIONAL
STANDARD

A MAGAZINE

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IN THE
GREAT PYRAMID OF JEEZEH IN EGYPT

MAY 1885.

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Until the articles of incorporation are taken out, this Magazine is published on the responsibility of Charles Latimer, therefore neither the members individually nor the Society as a body assume any liability.

All in favor of advancing truths most absolute, as portrayed in the revelations of the Great Pyramid of Egypt, and of the success of the Society in preserving inviolate the Anglo-Saxon weights and measures, will kindly communicate with the President, by whom also subscriptions, donations and communications will be gratefully received.

THE INTERNATIONAL INSTITUTE

FOR PRESERVING AND PERFECTING THE ANGLO-SAXON WEIGHTS AND MEASURES
CLEVELAND: 64 EUCLID AVENUE

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THE DRUIDS.

"Then God turned and gave them up to worship the host of Heaven."—Acts vii, 42.

Much has been written, and many a controversy waged, about the great stone monuments, temples, cromlechs, cairns, obelisks and tolmens, that stand in Britain and its isles. They are so like in form to some of those that rear their giant masses from the forests of Tartary and the plains of Arabia, to the jungles of Central America, that it is probable they had a like origin. They tell the faith of a people who were "scattered," of a nation who were "wanderers," and who, wherever they located, erected, according to their earliest customs, "standing images" as monuments of their belief, their traditions and their discoveries.

These standing images of Great Britain have been the most carefully studied. The contradictory statements, and the equally contradictory conclusions, place the student in the condition of a pendulum, between assertion and evidence; and if at last, in weariness, he "runs down," he finds in his bewilderment no relief from the restlessness of research. Very Athenians are the writers on this subject, for one says "one thing and one another." One gives the greatest of these remains—the well

known Stonehenge—to the Romans. Dr. Stukeley writes a book entitled 'Stonehenge Restored to the Druids,' in full faith in their Druidical origin. Ritson calls Stukeley a "ridiculous dreamer." One after another, antiquarians have measured and investigated; they have noted the positions of the stones; have theoretically restored the missing ones, and have formed and apparently proved the most contradictory conclusions. Among all, the weight of evidence is on the side of their having been erected—at, perhaps, different times—through the influence of a powerful and learned priesthood, known as Druidical.

The stones have an actual and visible existence; the priesthood lives in tradition, and the memory of their doubly mixed worship in the names of localities, in the festivals and in the odd customs which have descended from the earliest times. By their "doubly mixed worship" I mean the worship of Jehovah and of Baal, of the one God and of the host of heaven, as well as their union of civil and religious power. This last gave an authority to the priesthood over both "souls and bodies of men" which made them almost invincible. What written history there is, we gain chiefly from the Welsh Triads and from what Julius Cæsar has left in his journals. The Triads were later but probably not less reliable. They tell us that the worship of the Druids was not solely a worship of heathenism, although heathen rites and fearful cruelties were mingled with it. It was a religion of civilization and of intelligence. The priests were the cultivated class, and if they had one faith for themselves and another for the worshipers, it was only what the greatest church organization in the world has had: Faith for the priests, sight for the people. The God for the initiated, His personified attributes for those whose unenlightened natures craved a visible deity.

But it is the works of these great priests that I propose now to examine. Before any satisfactory conclusions can be reached, the various theories must be weighed and measured and compared with such facts as we have. Patience and perseverance must be brought to the task; the very mysteries must be struggled with in the same spirit that sustained the novices who ventured to be initiated in the hidden wisdom of this ancient

priesthood—the Chemarim of idolatrous Israel. They passed through darkness “in caves and caverns of the earth;” they groped in uncertainty, until at last, in the very abyss of despair, truth was evolved, and—relieved from the weight of doubt and error—the brave adventurer ascended joyfully to the full happiness of light and reward.

Among those who have sought the truth, the Rev. E. Duke has been the most signally recompensed. He has deduced a theory, tested it carefully and given the results in a book which reads like inspiration. His theory deals especially with the remains of Wiltshire, but is so thoroughly sustained that it is possible that it gives the clue to the elucidation of many more of these gigantic traces of a past civilization in all the lands where similar ruins are found. Before his theory can be appreciated, the reader must bear with a short description or review of some of the temples of which he speaks.

We will begin with Silsbury, or Silbury Hill, situated in the County of Wilts, in the southern part of England. The meaning of the name is “great or marvelous hill.”

Of this hill Higgins says:

Silbury Hill is an artificial mound of such immense proportions and so deceitful in external appearance that I never could have believed its having stood upon so much ground had I not ascertained the fact by actual measurement. The learned Stukeley has in the description of this mound given reins to his fancy, which has so transported him beyond the region of truth, that he has stated “that some king was the founder of the temple of Abury (north of the hill), and that Silbury Hill was raised for his interment.” His opinion is always ingenious, and therefore I lay it before my readers.

This theory I will omit, and as I have only notes from Stukeley before me, I will quote the description from Higgins’ ‘Celtic Druids’

Silbury is a most astonishing collection of earth artificially raised, worthy of Abury. . . . It stands exactly south of Abury, and exactly between the extremities of the two avenues, which, in the form of a snake, form the approaches to the temple. . . . The circumference of the hill, or as near the base as possible, measured 2,027 feet; the diameter at the top 120 feet; the sloping height 316 feet, and the perpendicular height 170 feet, but that part of our measurement which will occasion the most surprise is, that this artificial hill covers the space of five acres and thirty-four perches of land.

Higgins then says:

For what purpose this huge pile of earth was raised, appears to be beyond the reach of conjecture, but I think there can be no doubt it was one of the component parts of the temple at Abury, not a sepulchral mound raised over the bones and ashes of a king or Arch Druid.

In this description please note particularly that this mound is made of earth; this is an important element in Mr. Duke's theory. Immediately north of Silbury Hill, is the wonderful but well known and oft-described temple of Abury (Hebrew *Abiri*—potentes, or mighty ones). I will quote a part of a description of it, also through Higgins, from the 'History of Wiltshire,' by Sir R. Coalt Hoare :

The situation of Abury is finely chosen for its purpose, being the more elevated part of a plain, from which there is a descent every way. But as the religious work in Abury, though great in itself is but a part of the whole, the situation of the design is projected with great judgment, in a large plain four or five miles in diameter. The whole temple of Abury may be considered as a picture.

After long examination, Dr. Stukeley, from whom this is quoted by Sir R. C. Hoare, decided that the long lines of stone avenues represented a snake. He thought, "a snake transmitted through a circle. The head of the snake is carried up Hackpen Hill;" (*hac*—snake, *pen*—head. In Yorkshire snakes are yet called *hags*.) "The tail of the snake is conducted into the descending valley below Beckhampton. Thus our antiquity divides itself into three portions. The circle at Abury, the fore part of the snake leading toward Kennet; the hinder part leading toward Beckhampton—which I call avenues—to the great temple at Abury."

The temple, supposed to represent the body of the snake, is formed by a circular agger of earth, having its ditch within-side, contrary to the mode adopted in works of defense, and thereby proving it to be of a religious nature. The ramparts enclose an area of 1,400 feet in diameter, which on the edge nearest the ditch was set round with a row of rough, unhewn stones, and in the centre was ornamented with two circular temples. The space of ground enclosed within the vallum has been estimated by the Doctor at twenty-two acres. The outward circumvallation was computed at 4,800 feet. The number of stones that formed this outward circle was one hundred originally, of which, in A. D. 1722, there were eighteen standing and twenty-seven thrown down. Two concentric circles formed the temples, the outward in each consisting of thirty stones and the inward of twelve. The only difference which the Doctor could discover in these two temples was, that the one

towards the south had a central obelisk, and the one towards the north a cove consisting of three large stones, placed with an obtuse angle towards each other. The central obelisk seems to have existed in Stukeley's time, for he states its being of a circular form at the base, and of vast bulk, twenty-one feet long, eight feet nine inches in diameter, and, when standing, higher than the rest. He further adds, that "exactly in the southern end of the line that connects the two centres of the temples is an old stone with a hole wrought in it." (I omit all the theories in regard to the various uses of these stones, as some of them are entirely disproved, and of the others, any student can choose between them). A note appended to a part of the description states that

Dr. Stukeley remarks that the meridian line passed through the centre of the grand circle, and of Silbury Hill, and on making our observation and allowing for the variation of the compass, we find it still does the same.

The more particular descriptions are so interesting that it is difficult to know what to omit, but as this article cannot be illustrated by explanatory plates, I will go back to Hackpen, the head of the snake, on the summit of Overton hill. The head was represented by a circle; it was formed of two concentric ovals, the longest diameters being east and west.

Of this Overton hill the country people have a high notion from time immemorial. It was a few years ago crowned with a most beautiful temple of the Druids. They called it the Sanctuary. It had suffered a good deal when I (Stukeley) took the prospect of it with great fidelity in 1723. Then Farmer Green took most of the stones away, and in 1724 Farmer Griffin ploughed half of it up, but the vacancy of every stone was most obvious, the hollow being still left fresh. In the winter of the same year the rest were carried away and the ground ploughed over.

Stukeley greatly laments the destruction of this beautiful temple, which was of proportions to be understood by all. He then describes the part of the snake which he designates as the tail. He speaks first of several of the stones which were known of by the neighbors, but which had been taken away for different purposes, some used in building, some in a causeway, some broken to get rid of them. He was, however, able to trace the line of the Serpent Avenue (Beckhampton), and carefully describes it, telling the names of those who destroyed the great stones of which it was formed. At last he comes near the end and says:

Then it descends by the road to Cherill, till it comes to the Bath road, close to the Roman road, and there in a low valley it terminates near a fine group of barrows, under Cherill Hill, in the way to Oldbury Camp. This point, facing that group of barrows and looking up the hill, is a most solemn and awful place. A descent all the way from Longstone Cove, and directed to a descent farther down the Bath road, and where no less than five valleys meet, and in this very point only, you can see the temple on Overton Hill, on the south side of Silbury Hill. I am satisfied there was no temple or circle of stones at this end. I apprehend this end of the avenue grew narrower in imitation of the tail of a snake, and that one stone stood at the end by way of close.*

"This account," says Dr. R. C. Hoare, "must be our chief authority, for, excepting two of the stones which are supposed to form Longstone Cove, not one remains upright."

Of Longstone Cove, Dr. Stukeley says:

This Longstone Cove is composed of three stones, set upon the arc of a circle, regarding each other with an obtuse angle. This is set on the north side of the avenue, one of its stones forming the back of the cove. It stands midway, being on the fiftieth stone. It is placed on the highest ground over which the avenue passes.

The grand total of stones supposed to have been in the original work is 650; of which 400 form the avenue; 648 would probably be more correct as one of the avenue stones forms the back of the cove, the stones of which should therefore be given as *two* instead of three. The stone numbered as the tail of the snake is also doubtful. Of the total stones of the temple in Mr. Aubrey's time, A. D. 1663, only 73 were standing; in Dr. Stukeley's only 29; in Sir R. C. Hoare's, 1815, only 17. The delapidations have gone on rapidly since then; means of burning the stones have been found, so that ere long there will be but little left for antiquarians to theorize over. Perhaps their work is almost done.

Before leaving Abury I would suggest that the temple which stood on the body of the snake did not necessarily represent its body, nor was the snake necessarily transmitted through its circle. The temple may have represented something traveling on the snake. It was impossible to entirely separate Stukeley's description from his theories. He reflects thus upon this wonderful work:

This temple must have been the work of a great and learned people. The works evidence the genius of their founders. They have grandeur and symmetry in execution; in compass extensive, and in effect magnificent and agreeable. Never since creation was so magnificent an idea found in mortal minds as this stone hieroglyphic. The snake

*This statement has not been proved, the snake may have been partly represented, and have been cut off abruptly.

is three miles long, in proper proportions, its sinuosity well represented in huge curves running contrary ways, conducted over elevations and depressions. The plan of Abury was the circle and the snake. The Egyptians add wings.—('Stonehenge Restored to the Druids,' p. 49.)

Of some of the other temples included by Mr. Duke, I have been unable to find descriptions in time to add them to this article. We will therefore consider Stonehenge, as in that he finds the most significance.

Different meanings are given for the word; "hanging stones" is generally accepted, but the one which best agrees with Mr. Duke is that which defines the Welsh name for Stonhenge—Gwaith Emrys, or Emreis—"the structure of the revolution." Mr. Duke does not seem to have noticed this meaning, or I may have failed to see that he did so, but its appropriateness will be evident, in fact, it adds greatly to his idea.

Here it will be well to note the three great works of which the Triads tell us: 1. The lifting of the stone of Ketti. 2. The building the work of Mmyrs. 3. The piling up the mount of assemblies.

In describing Stonehenge I will quote from Stukeley, Hoare and Higgins. On Salisbury plain are still standing 94 of the great stones which formed the "proudest singularity" (Stukeley) of all the Druidical temples of Britain. It is "surrounded by a ditch and slight agger of earth" (Hoare). The ditch being within the vallum distinguishes it, as this peculiarity does Abury, from a military work. "There is but one entrance into the arc; this faces the northeast, and is marked by a bank and ditch called the avenue. The first object which arrests one's attention is a large rude stone, called the 'Friar's Heel;' it is about 16 feet in height. We now enter the area of the works, having the bank and ditch on our right and left. Adjoining the agger, within the area, is a large prostrate stone . . . bearing the same mark of tools as the large uprights of the temple. This stone measures 21 feet 2 inches in length, of which 3 feet 6 inches being under ground, the height when upright was 17 feet 8 inches. The distance from the first stone in the avenue to second stone at the entrance of the area was about 100 feet, and the distance between that and the outside of the stone

circle nearly the same. There are two small stones within the vallum, one 9 feet high and the other 4"—(Hoare).

As the descriptions are of plates it is difficult to select such as will give a clear idea of the temple, but probably all our readers have a general knowledge of those grand ruins, standing in solemn majesty on Salisbury plain. It will only be necessary to give some measurements and statements before quoting Mr. Duke.

"The temple consists of two circles and two ovals. The outward circle, about 300 feet in circumference, is composed of huge upright stones bearing others over them, which form a kind of architrave." These are curiously mortised into the upright stones. "This circle consisted originally of 30 stones, of which 17 are still standing. They are about 13 feet high, and from 6 to 7 wide. The grandest part of the temple is the cell or sanctum. This inner temple represents two-thirds of a large oval and a concomitant small oval; as in the outward temple, we find a large and small circle. The large oval is formed of five pair of trilithons, or two large upright stones with a third laid over them." These trilithons rise gradually as they approach the altar, or the stone so-called, measuring from 16 feet to 21 feet 6 inches. "The inner oval consisted, according to Stukeley, of 19 stones; they are smoother and smaller than those of the inner circle of small stones, and incline to the pyramidal form. One stone deserves notice from having a groove cut all down it, and it bevels off almost to an angle on the inner side. The inside diameter of this whole building is about 100 feet" (the number 100 was a favorite one with these builders, as also the number 4, which was to the Druids a mystic number); "the width of the entrance into the cell from the trilithons on each side is 43 feet."—Hoare.

They that were within, when it was in perfection, would see a most notable effect produced by the elliptical figure, included in a central corona, having the large hemisphere of the heaven for its covering. . . . The walk between the two circles, which is three hundred feet in circumference, is very noble and delightful. . . . The intent of the founders of Stonehenge was to set the entrance full northeast, being the farthest elongation of our celestial luminary northward.—(Stukeley, in 'Stonehenge Restored to the Druids.')

He also says the meridian line passes directly through the

Cursus, and that by calculation on the variation of the compass he ascribes the building to 460 B. C.

The stones used are not all alike. Some of them are of a kind called Sarsen, which, Dr. Stukely says, is a Phœnician word and means rock. Their immense size and weight has been the cause of another set of theories in regard to their transportation. One of the stones is said to weigh seventy tons, and to move such stones requires a mixture of intelligence with strength that can only be obtained by the employment of a number of human beings. Reason is the strongest mechanical power. It was brought to bear on the transportation of what is said to be the heaviest stone ever moved, that upon which stands the equestrian statue of Peter the Great, in St. Petersburg. Several thousand men were harnessed to the stone; the king and his court were present; banners were waved and martial music directed the movements; one great combined movement raised the end of the stone upon a roller and success was assured. "Now," says a writer in *Harper's*, who describes this, "if we add to such power as this the animation of that religious faith that can remove mountains, the building of the Stonehenge and other great temples ceases to be a mystery." The same writer says that an antiquarian who visited the place with Emerson, "divided the stones into astronomical and sacrificial, and placing the philosopher upon one of the latter, pointed him to an astronomical, and bade him notice that its top ranged with the sky line, which being conceded he stated that at the summer solstice the sun rises exactly over the top of that stone, and at the Druidical Temple at Abury there is a stone in the same relative position."

After some comparison of Stonehenge with a "very similar stone temple in the heart of a forest discovered in Tartary," he says:

The stone, sixteen feet high, and about two hundred yards from the temple, called the Friar's Heel, is not only set exactly at that point, toward the northeast, where the sun rises at the summer solstice exactly over its top, but has been set in a place where the ground has been scooped so as to bring its top, as seen from the altar, precisely against the horizon. It is thus plainly an astronomical stone. Every year people go out on the twenty-first of June to see the sun rise above this stone, and that it does with absolute exactness admits now of no question.

That the builders of these temples worshipped the heavenly bodies is generally conceded. Stukeley's researches show they revered the circle and the oval, and that in some way the serpent was connected with their religious observances, and that in the barrows surrounding the temples, those who were buried were placed with their heads to the north.

A philosopher and astronomer, by the name of Waltire, thought this structure was erected for making observations on the heavenly bodies, and that the surrounding tumuli or barrows accurately represented the situation and magnitude of the fixed stars, forming a complete and perfect planisphere. He thought he traced 1,500; he also thought some of the barrows registered certain eclipses, and that the trilithons are registers of the transits of Mercury and Venus. He seems to have a glimpse of the grand theory of Mr. Duke, which combines all the astronomical knowledge that has been conceded to these ancient philosophers.

The outline of this theory can be given in a few words. Mr. Duke considers that this system of Wiltshire Temples represents a gigantic orrery, which includes the sun and moon and the planets then known, all of which were supposed to revolve around the earth. He also discovered the magnificent belief in the Magnus Annus, that great year of years which would restore the heavenly orbs to their original starting point, and during which the Mundane Egg would arrive at perfection and burst into new beauty and true life. He calls Stonehenge the Temple of Saturn, for reasons which are faintly shadowed forth in traditions which I have found wherever I have discovered any especial worship of Saturn as planet or as god. I will give some of them before quoting Mr. Duke's own words. Saturn is familiar to us mythologically as a son of Cœlus (the heaven) as father of Time, and represented as an old man with a scythe, and with a circle formed of a serpent holding his tail in his mouth, and who devoured his children (the years) as soon as they were born. This Saturn, with the strange glimpses of truth that make mythology a history of religious thought, reigned during a typical golden age, when liberty was proclaimed on earth. All this was represented in the Roman Sat-

urnalia, a feast also observed by the Druids, and when priests made their offerings with uncovered heads.

"Every thirtieth year," says John Smith, in his 'Gallic Antiquities,' "the Druids held a festival in honor of Saturn when he entered the constellation of Taurus."

Saturn was also known as the "Sabbath Star" of Israel, and the Canaanites considered that the spirit of the planet Saturn dwelt in their hideous conception of Moloch.

In Macrobius (quoted by Stukeley in 'Stonehenge Restored to the Druids,' p 39) mention is made of a famous round temple in Thrace, which, from the description, seems something like our Stonehenge, it was sacred to Sabazius, which may be a corruption of Sabbaoth. When the rites of Bacchus were performed they called Evohe Sabbai, undoubtedly Jehovah Sabbaoth.

Saturn in Hebrew is Sabbatei, and means *resting*; in Arabic it is Refan, also *resting*; in Coptic, Refan or Remphan, *restoring*, which reminds us of the verse from which the heading of this article is taken: "Then God gave them up to worship the host of heaven. Yea, ye took up the Tabernacle of Moloch, and the star of your god Remphan."

In Mazzaroth the following passage bears upon the subject, as it gives the order in which the planets composing this stone orrery were probably discovered (Third Part, p. 2):

If man was created when the sun was quitting Leo for Virgo, *Mars*, if in Aries would be very bright, and its motion soonest perceptible, the first luminary discovered to be a planet. If *Mercury* were in Virgo, it would be perceptible for a while in the evening twilight and then disappearing, prove itself to be a planet. *Jupiter* in Sagittarius would be splendid in the midnight sky. *Venus* in Libra towards the morning, and *Saturn* (Sabbatei, the star of the rest), perhaps first discovered near Jupiter in the midnight on the Sabbath, distinguished as a planet by its pale orb. These signs are called in astrological tradition the "houses of the planets." If they were first observed in them, a reason for this may be given for which none other has ever been alleged. The succession of the planetary names of the days of the week may be accounted for by the planets having first been recognized in that order.

In a note on Leo, it is stated from Macrobius that the Egyptian astronomers thought that at the creation, the sun rose in Leo and the moon in Cancer. Julius Africanus gives the same testimony.

According to Herschell "the surest and best characteristic of a well founded induction is when verifications of it spring up, as it were spontaneously, from quarters where they might be least expected, or from those which were considered hostile.

Evidence of this kind is irresistible." And such evidence springs up on every side of this subject, so that the wonder grows that we have not always known and believed what it now seems impossible to doubt.

Who but a people who, in their national childhood, knew Jehovah as their King and His revelations as their household words, who turned reverently to the orbs of heaven as His teachers to them of signs and seasons and days and years, could have conceived of a work like this? Who but such a people, even though they had perverted their early faith and made gods of the heavenly hosts, whose order and regularity of movement almost asserted a divinity—who but they could have impressed every nation with records of the truth, and reared such monuments as those of Wiltshire to tell the story of their faith, and the reason of their dispersion? "Oh Israel, thou hast destroyed thyself—return unto the Lord thy God, for thou hast fallen by their iniquity." "Israel hath increased the altars and made standing images, . . . hath forgotten his Maker, and builded temples, and . . . worshipped the host of heaven."

But this may be called "assertion." Perhaps Mr. Duke's own words may give us "evidence." He says :

The ancients held that at the close of an immense period of years, all the heavenly bodies would arrive at the same place from which they started. This doctrine is called the Platonic Cycle, though not invented by Plato, but adopted by him. This is synchronous with the precession of the equinoxes described by Higgins ('Celtic Druids,' p. 149). It is certain the ancients observed this precession or recession of the equinoxes, and considered that in process of time all the heavenly bodies would revert to their original stations and a new world begin. Macrobius fixes its period at 15,000 years; some say 49,000; more modern astronomers say 24,800, 25,816, 25,920. My opinion—that this majestic and stationary orrery was denotive of this cycle of cycles—is borne out by reference to the Temple of Saturn, the modern Stonehenge. Here, in the centre, is an area beautifully assuming the form of an egg, and caused by the ecliptical location of the seven trilithons, the representations of the planets. This, with Smith, I regard as denotive of the *ovum mundi* of universal nature.

Smith did not recognize Stonehenge as the Temple of Saturn. But how the truth unfolds! Here within the only one of the series of temples in which it could be placed, in the inmost recess of the Temple of Saturn, whose orbit was held to include all time and space, surrounded by the representatives of the planets, was mystically placed the Mundane Egg, the germ of universal nature, receiving during the term of this cycle of cycles, the daily influence of the rays of the Sun, until the lengthened period of incubation passed, the old world shall cease to exist, and the new, spring into being. A more beautiful allegory, a more expressive emblem was never devised by mind of man or practically illustrated by the operation of his hand.

The Druids.

In the great orrery or terrestrial diagram, a tumulus of earth on Silsbury Hill represents the Earth. This seems not to have been a temple; this circumstance, that Silsbury Hill does not develop as a religious temple leaves it admirably adapted as the Earth, the centre of this mundane system. If I leave this representation of the Earth, and proceed northward, I arrive at two stone circular temples, surrounded by a cycle of one hundred stones, and the whole enclosed in a fosse; to my surprise I find this called Abury (Hebrew, *Abiri*—potentes, or the mighty ones) evidently allusive to these two temples as representations of the Sun and Moon, the chief deities in the planetary worship. I find these temples set in varied forms, and in their several details referable to astronomical cycles. Temple of the Sun contains the cycles of days of month, months of year, and a single stone to denote the entire year. Temple of the Moon, the cycles of days of month, months of year, and of early tripartite division of seasons.

The southern temple is that of the Sun, for a stone (stands in it) evidently a gnomon, from its exact location to take observations of the rise of the Sun, at the winter solstice. Stonehenge has the same for the summer solstice. Now connect with Silsbury Hill these temples bounded by their cirque of one hundred stones. They are located on the central portion of an immense curved serpent, whose bow is towards the south, and whose half surrounds Silsbury Hill. Here I, in this serpent, recognize a portion of the ecliptic. The ancients represent the ecliptic as a serpent; the Sun and Moon ranging around the Earth as the centre of the universe.

Three miles south of the Earth I find the Temple of Mercury. Near it is Knap Hill, which suggests Egyptian Kneph—Mercury.

Four miles north of the Earth I find another temple, which study induces me to ascribe to Venus.

Three miles from Mercury I find an immense mound, supposed to be a religious temple, traditionally ascribed to Mars, situated at Marsden (*mars* and *den*—a cave or residence).

Pursuing my pilgrimage on the meridional line three miles, I find another temple, which I assign to Jupiter; from which, four miles on the meridional line to a tumulus of observation, I see the temples of Jupiter and Saturn. Three miles down a slope brings me to Saturn—Stonehenge. This temple fronts the northeast, and is erected with reference to the summer solstice.

From the stones I learn they speak the cycle of the years of Saturn, or the emblem of the race of man, thirty stones on thirty uprights; the cycle of the planets, and the Metonic cycle of nineteen years.

That the so-called "altar stone" could not have been used for such a purpose, from the fact that it reduces to powder under the action of fire. It is a station of astronomical observation. A man stationed on it on the day of the summer solstice could see the sun rise behind the apex of the gnomon in the distance, and then gloriously proceed on its way.

For the intensely interesting astronomical description which follows, I must refer the reader to Mr. Duke's book, 'The Druidical Remains of the County of Wilts,' by the Rev. E. Duke. London, 1846.

It was in my possession only a few hours—only long enough to gain these few suggestions of its interest. After summing up the wonders and developments of his discoveries he says:

Unite the whole, and find that great astronomical scheme typifying the Magnus Annus, the Cycle of the World.

Before leaving the subject it will not be irrelevant to propose

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an explanation, suggested by his theory, of the Egyptian hieroglyphic—the winged globe and serpents. Among its meanings—for in both mysteries and prophecies there are many—may not the first and simplest have been a representation of the Sun flying on its course, with outspread wings, while its circular path was represented by two serpents, the better to explain its northern and southern flight.

This emblem, Dr. Stukeley thinks, was represented at Abury, although he gives a very different signification. His may be correct, but that the Egyptian emblem primarily meant the Sun “rejoicing as a strong man to run his course,” is proved by their fable of the Phoenix, which, after a flight of six hundred and fifty-one years, was burned to ashes in the concentrated rays of the Sun, represented on the roof of one of their temples. An egg was developed from its ashes, and a new bird rushes on its tireless round. This was the planet Mercury and its transit over the Sun’s disc, where it disappeared, as if consumed by its fiery heat, reappearing again after its passage as if in renewed life.

These transits Waltire supposed were recorded at Stonehenge, adding another to the “verifications”—for the wisdom of the Egyptians, as well as their idolatries, as one of the strong influences in the formation of the Israelitish national character.

E. BEDELL BENJAMIN.

[*To be Continued.*]

THE MEASURES AND WEIGHTS MENTIONED IN
THE BIBLE, IN CONNECTION WITH STRUCTURES,
WORSHIP AND NARRATIVES.

In proposing to myself to do this work, I am encouraged mainly by my knowledge of the original languages of the Bible, as well as with their dialects. But this is not the only qualification necessary for this work. A facile handling of mathematics is equally as necessary for this work, in which, however, I am regretfully conscious to be lacking. Yet the work must be done, and in a way free, on the one hand, from those preconceived notions which are engendered so frequently by an undue reverence for traditional translations and interpretations, and, on the other hand, free also from fond fancies which one may become inclined to interpret rather into the original than interpret the sound sense from them. The Christianly reverent spirit of both the contributors and readers of this Magazine, the high scientific attainments of some of them, and the free spirit which pervades the valuable articles in it, encourage me to put my work on record in it, fondly hoping for the needed mathematical and other help from its readers and contributors. Not claiming any arrogant infallibility, I desire, on the contrary, and solicit just criticism as an aid in this work, so that it may ultimate in, at least, an approach to the truth, which I and others are, I trust, always in quest of.

I propose to take up every place in the Bible where direct statements or passing allusions are made of weights and measures, and so far as necessary discuss the objects which are weighed and measured. The latter work, although not altogether belonging to the general object of this Magazine, is yet necessary in order to correct frequent current mistranslations and interpretations, which may as well find here as anywhere else a recording resting place.

(I.) Noah's Ark.—The first mention of measures in the Bible we find in connection with Noah's Ark. (1.) The name of

this structure in the original is $T_{ae}B_oH$,*and is found in two places only in the Old Testament, viz: here and in connection with the exposing of the infant Moses on the waters of the Nile. (Exodus ii, 3-5.) There is no Hebrew word as a verb from which this noun might be derived, nor is there a verb which might be derived from this noun. From its use in the two narratives the word evidently denotes a hollow, covered vessel, designed for the safe keeping of living beings against damage by water, on which it is made to float. That this Ark of Noah's was not an ordinary open ship is evident from (a). That neither one of the Hebrew words for ship (which are $SF I_1 N_o H_i A_o N_i I$, or $A_o N_i I_o H_i \dagger$ and $TS_i I$) are used here, and (b) that special provision is here made for a top light, which admitted air also, and which implies, of course, that the structure was covered by a roof, and lastly (c), that it had a side door and hence no open deck. (Compare Genesis vi, 16 and viii, 6.) The word in vi, 16, $TS_{on} H_a R$, which specifies the arrangement for light and air, gave translators and interpreters most trouble. This word occurs in the singular, only this one time in the Old Testament, while it frequently occurs in the dual number $TS_o H_a R_o I; M$, in which number it denotes the light of the sun at high noon, when he stands directly over our heads. This established meaning in the dual number should have been sufficient to lead Bible scholars to take the word in the singular as denoting simply light that comes from the top.

Now, let the reader bear in mind the following points: (1.) That Noah made a window in the Ark, which he used for observing the state of things outside of it, (viii, 6), and that this window was not mentioned in his specifications. The Hebrew word for this window is $HH_a LV_{ou} N$, and is used for an opening made in a wall of a house for the purposes of light and out-

*I shall write Hebrew words in capital consonants, as they are in the original, and the vowels beneath in small letters. I prefer to use the original Hebrew word for this vessel, and would rather transcribe than translate it, because no adequate word in the English offers itself for the purpose. The consonantal root T. R. of this word is seen in the Greek "Tibae," and in the Teutonic words "boot," "boat" and "bateau."

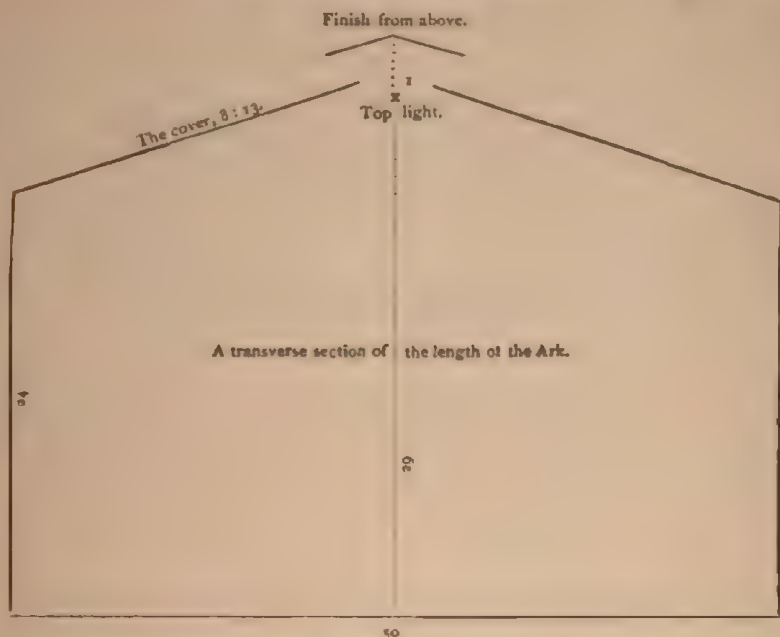
†The original Hebrew had no vowels, and as such letters as A and I are consonants, and can be articulated then only when a vowel is added to them, A_o is, therefore, equivalent to our O, and I_o equals yo, etc., etc.

look. (2.) That Noah made a covering on the Ark, which was also not in specifications. (viii, 13). (3.) The indications of the Ark were not merely to protect a large number of animals from drowning, but also to shelter them from a forty days' and nights' rain of unprecedented severity, which, had it been allowed to fall into the Ark, would have drowned both them and the Noah family in the very Ark which was meant for their safety. Then, there was need also of keeping an enormous amount of food for the animals from spoiling by the rain. The room for both animals and their food offered no difficulty to Noah, and neither does it now to us, who know of the Great Eastern's dimensions, and its perfect safety even on the stormy Atlantic. The great difficulty which did present itself to Noah must have been to provide light, which must have been indispensable for a proper attendance upon the animals, and also sufficient air for proper ventilation, and to do this without letting the rain come in. Bearing these points in mind, the reader will see from the following translation and short comments how nicely all the indications were met by the divine specifications of the structure:

(Genesis vi, 14-16.) Make unto thee a Teva of Cypress planks. Make the Teva in stalls, and rosin it from the inside and outside with rosin. (15) And these are (the dimensions) that thou shalt make it: three hundred A_aM_oH the length of the Teva, fifty A_aM_oH its width, and thirty A_aM_oH its height (16). A top-light shalt thou make for the Teva, and at an A_aM_oH from above it (the top-light) thou shalt finish it (the Teva); and the door of the Teva thou shalt put in the side of it, lowermost ones, second ones and third ones shalt thou make it.

COMMENTS.—The Cypress wood and rosin were excellent means of disinfection. For the rain to shed well, the roof, or cover, of which we read in viii., 13, must, of course, have been a slanting one. But what was the pitch? Answer.—A Teva had a roof, and this Teva had to have a slanting one. The 30 A_aM_oH height must therefore refer to the perpendicular from bottom to the comb. But of this height 1 A_aM_oH was to go off for the covering up of the top-light, so that the main roof

stopped at the level of $29 A_a M_o H$ of the perpendicular, and left an opening, which was the top-light, the width of which is not specified. Then this opening was covered by the remaining part of the roof, only raised $1 A_a M_o H$ from the level of the opening, and having the slanting sides descending over the main roof down far enough to prevent the washing of the rain backwards into the Teva. The distance between the overlapping slants of the two roofs is, of course, determined by the specified $1 A_a M_o H$ height of the upper roof. This arrangement must have met all the indications of light and air, since the opening was the whole length of the Teva, viz.: $300 A_a M_o H$, while its width was left to the judgment of the builders. The angle, however, which the inclines of the main roof made with the walls of the Teva would have to be determined by the height of these walls, which were not $30 A_a M_o H$, since the specifications speak of finishing the Teva $1 A_a M_o H$ from above. Now, the respective heights of the specified three tiers of stalls were not specified, but were left to the good judgment of Noah. Let us, therefore, assume, merely for the sake of illustration, that Noah divided the $30 A_a M_o H$ height of the Teva in five parts, and allowed four parts, $24 A_a M_o H$, for the three tiers, and also for a deck with bulwarks; then there would have been left $6 A_a M_o H$ for the roof. Of these Noah could have taken $5 A_a M_o H$ for the perpendicular side of the rectangular triangle, and $25 A_a M_o H$ (half the width of the Teva) for the horizontal side of the same, and these sides would have determined for him the incline of the hypotenuse (the slant) and its angle with the wall. Then, having determined upon where to stop the roof for the top-light, he could have calculated the proportions of the upper roof. The accompanying figure will show the reader what I have endeavored to explain.



I cannot forbear calling the reader's attention to the remarkable words in Genesis vii, 16: "And Yahooh (English, Jehovah) closed up in his (Noah's) stead." Noah was not on the outside to make the door water-tight. The righteous master mechanic was safely secured by his divine teacher. What analogy is here with the closing up of the Great Pyramid? Did Noah know something of what we call geometry? Did he know anything of the law of the hypotenuse, the so-called forty-seventh of Euclid? Let better mathematicians than I am answer. I am only a linguist and stand good for my work only, which is, not to add or take away from what "thus it is written."

(II.) The cubit, the Hebrew A_aM_oH .—In all languages we find nouns derived from verbs, and verbs from nouns. The question is useless as to which was first conceived by the human mind; it is, and ever was capable of conceiving and naming the one as well as the other. The Hebrew word A_aM_oH , or as it is traditionally and correctly pointed to be pronounced A_aMM_oH , is usually derived by lexicographers from a supposed verbal root

of the two letters A M, to which they give the supposed meaning of "gathering-in-one." And since this A_aM_oH is applied in Hebrew to a perpendicular standing on a horizontal, therefore, it is said, it applies to the elbow joint, and then to the forearm as a measure, hence the Latin *cubitus*. But there is no such verb-root A M in any semitic, at least not in the Hebrew language. We find, however, that the two lettered word AM, when traditionally pronounced $A_{ae}M$, means "mother." And again we find that when an H is added to AM, and traditionally pronounced A_oM_oH it means then "female servant." And again, when these last three consonants are traditionally pronounced $A_{oo}M_oH$, then it means "nation." Now, it does not strike me as probable that all these diverse ideas of "gathering-in-one," "ell" (cubit), "mother," "female servant" and "nation" should be derived from that one root "AM." It is my linguistic conviction, growing out from comparing words in some twelve different Semitic and Aryan languages, that the fond notion, entertained yet by some, that the Hebrew is a primitive language is not true. That all languages sprung from one primitive one is a conviction which I share with all extensive linguists, and so far confirms my faith in part of the sacred story about the unity of language among the descendants of Noah. But as to that part of the story which refers to the origin of the diversity of languages, I think linguists do not rightfully consider it. They proceed in their investigation on the assumption that that diversity originated from normal physiological and psychological laws, and in this way account for the permutations of some sounds and the suppression of others in different languages and dialects. They speak of Euphony and Cacophony as normalities, where there is in reality an actual inability to pronounce certain sounds. Thus the Greek is actually unable to pronounce the sh sound, and he can only pronounce the s sound; the present English (not the Scotch) cannot pronounce the guttural ch; the Slav cannot pronounce the th sound; the Chinese cannot pronounce the r sound, etc., etc., etc. Now, all these inabilityes are not physiologically normal but pathologically abnormal. And here is, it seems to me, the key by which to unlock the mystery of the diversity of all languages,

which are, after all, derivable from one primitive one. It is true that when a pathological state is once established in an organism, it then proceeds to grow and develop according to certain laws of its own, and the propagation of other pathological organisms from it is not hindered. But all these do not make a pathology a physiology. It cannot be successfully maintained that a pathological state is merely an evolution of an opposite physiological state; such a genesis cannot be shown and the law of "like produces like" must be true. But how, then, does ever a pathological state begin? The only answer to this is: By a catastrophe from without and not by an evolution from within. This I take to be as true in language as it is in all living organisms. There must, therefore, I conclude, have been a fatal catastrophe in the history of the human organism, which produced a pathological state in both the human organs of speech and hearing. And since we know that fright may produce such a sudden shock upon the human nervous system as to cause total speechlessness, hence the supposition is natural that fright was the cause of the diversity of languages, in which we can yet trace their unity; and the sacred story about the confusion of languages points in that direction. It remains yet for some competent hand to write "*The Pathology of Human Languages, Based Upon the Pathology of Living Organisms.*" But the Hebrew language, even if it should have been the primitive one, was no exception to that catastrophic event recorded in the very Hebrew scriptures. I, therefore, conclude that the roots of many Hebrew words are to be found purer and fuller in other languages, Aryan as well as Semitic.

It is thus that I explain to myself the origin of the Hebrew *AacM*, which means "mother." I regard it as a pathological result of the primitive root, consisting of the Semitic *Ain* and *Mem*, which means "nation." That *Ain* is a compound of "G" hard and *HH*—*ch* German. None of the Semitic surviving tribes, except the Arabs, have preserved its primitive pronunciation, and the Aryan tribes have substituted for it the *F* sound, in the same way as the English write "cough," and pronounce the word "couf". The present Jews (except the Spanish and Portuguese, who make of it an absurd nasal sound) flatten the

Ain to a mere Alef. All these corruptions are not physiological but pathological. Of this GHHM, arose the FM root of the Italian tribes, from which we have *femina*, *famula*, *famulus*, and *familia*. And this formation of the idea and word *familia* from *femina*, or from its primitive root FM, which means "female servant," finds its counterpart in Hebrew usage, where from the word Sh₁HH₀H, which means also "female servant," is from the idea and word M₁ShP₀HH₀H, meaning "family." There came a time when the woman became no longer the wife of the one husband, but the mere slave and breeder of progeny, which was called after her. Some tribe of the sons of Eber were unable to pronounce the Ain (G₊HH) sound, and flattened it down to a mere Alef sound, and thus became the Hebrew A_{ae}M—"mother." Then adding an H and changing the vowel of the A and giving a vowel to the M, the word A₀M₀H was found, which means "female servant." And again changing the vowel of the A there was formed the A₀₀M₀H, which means "nation." I conclude, therefore, that the two-lettered primitive root AM has nothing to do with the word A_aM₀h, which means "ell" or "cubit." The root of this word is not to be found in the Semitic, but in the Aryan languages, viz.: in the Greek "Oolenæ," and in the Latin "ulna," the root of which is OLN. Now the reader will remember that sounds pronounced by the same organs are permuted one for another in different, and even in the same, languages, and that the same is the case with the so-called liquid sounds LMN, and also R when it is rolled with the anterior part of the tongue, and not pronounced gutturally, in the Parisian fashion. The sounds B, V, M, P, F, being labials and labio-dentals, are permuted. Hence we find in the Chaldee ALV for OLN, from which is formed the word A_aLV₀H, by which the Hebrew A_aM₀H is translated in Isaiah vi., 4. And the Hebrew root of this last word is AMM, which last two Ms are the result first of the permutation of N into M, and then of assimilation and absorption of this M into the L, which is also permuted into M, so that the primitive OLN or A₀LN became in Hebrew A_aMM, and then A_aM. The evidence for this is, (1) in the traditional pronunciation of A_aM₀H as A_aMM₀H. (The H is only the sign of the

feminine, like the "æ" in the Greek "Oolenæ," and the "a" in the Latin "ulna.") The persistency of doubling the consonant of this word in other Aryan languages is remarkable, so in Anglo-Saxon, "Eln;" Dutch, "Ell," and "Elle;" German, "Elle," "Elna;" Gothic, "Aleina;" Icelandic, "Alin;" Danish, "Alen;" Swedish, "Aln." The variety of vowels inserted between these two consonants in some of these languages has nothing to do with the root. (2.) Another remarkable evidence that this Hebrew A_aM_oH is from the root ALN, or OLN, and not from the usually theorized root AM, is seen in the fact that in the eighty-three times when this word occurs in the Old Testament in the plural it is, without a single exception, written $A_aMV_{ou}Th$, while the plural of $A_{ae}M$ (mother) is invariably written $A_{ee}M_oTh$ without a V; and so, too, the plural of A_oM_oH (female servant) is, with only two exceptions, both in the same narrative (II. Samuel vi, 20-22), written without a V. This persistent V, I regard as a permutation of the second M in A_aMM_oH , which is assimilated and absorbed in the singular, while in the plural of $A_{ee}M_{ou}Th$ (mothers), and $A_aMH_{ou}Th$ (female servants), there was no second M in the root to permute. I know right well that the crowd of Hebrew grammarians regard this presence or absence of the V in the plural as a mere matter of orthographic variety, but so much the worse for these grammarians. I presume also, I must further say here, that some of our American professors of Hebrew would smile quite contemptuously on reading this my original investigation, and would self-complacently knock it all into a pi by that unanswerable argument of old. Why did not any of *our* scribes say such a thing before? But this does not affect me, since I know that there is no ancient Hebrew literature outside of the Old Testament, and I feel myself as much authorized to construct a grammar and lexicon of the Hebrew from this, as any one of those who not only followed each other, but even stepped in the very footprints of each other. *Original* Hebraists are very few yet in this country, and these will perhaps appreciate my labors in these and other writings. But *ad rem*. The diversity of languages results not only from pathological permutations, and also transposition of letters in words, but also from the appli-

cation of one and the same word to different parts of the animal and human body. So do the Latin and Greek apply the root BRCp in *Brachium* both to the elbow joint and to the forearm, while the Hebrew applies it to the knee exclusively, viz: B_eR_eCh. The Greek and Latin use the root OM to denote shoulder and also entire upper extremity, in the words *hoomos*, *humerus* (also Teutonic "arm") while the Hebrew applies it to the forearm alone, in the word A_aM_oH, derived from OLN, and has a separate word, Ih_eCh_eM, for shoulder (from which the German: "schenkel" and English "shank") and another, ZR_oGH_aH for "arm." Were it not that the Hebrew A_aM_oH is invariably translated "Pæchos" in Greek, the measure of which we know more or less, we would not know whether the word meant the length of the entire upper extremity, or only of the forearm and hand, and this Greek "Pæchos" is related to the Hebrew T_eF_aHH, commonly translated "span," and which I shall examine when I come to discuss this measure and its relation to the A_aM_oH. It remains for me yet to refer the reader of this paper to certain passages in the Old Testament to which Hebrew lexicographers refer in connection with this word A_aM_oH:

(1.) In 2 Samuel, viii, 1, is neither a place called Metheg Ammeh, nor does it mean "the bridle of Ammah," as given in the margin of the common version. The second word is simply wrong vowelized by the Jewish authorities, and should be vowelized A_{oo}M_oH and read "OOMoh." There is a keen thrust against the Philistines in this verse, by implying that they were governed like asses by a bit in the mouth, according to the saying in Proverbs xxvi, 3, "A switch for the horse (whom the true Oriental guides by a mere string in the mouth) a bit for (the stubborn) ass, and a rod for the back of fools." The entire passage in Samuel reads thus: "And it became after this, that David smote the Philistines and humiliated them; and David took the bit of the nation (A_{oo}M_oH) from the hand of the Philistines;" i. e., took the reins of the government from their hands.

(2.) In Deuteronomy, iii, 11, "the A_oMM_oH of a man" does not refer to any exact measure, but to the approximative

domestic measure from the elbow to the longest, or some other finger.

(3.) In Isaiah, vi, 4, "the $A_3MV_{ou}Th$ of the thresholds" means the posts of the door openings as they are let into the sockets of the thresholds, as the forearm is in the elbow joint. In a similar way, but using another part of the human body, does the English architect speak of the "jambs" of a door or window from the French "jambe"—a leg, a foot.

In concluding this paper I beg the reader to pardon its lengthiness and perhaps resultlessness, since all I have said did not bring us the knowledge of the true length of the $A_3M_oH = \text{cubit} = \text{ell}$. It frequently happens that we find something we did not set out for when we search thoroughly and honestly for something else. Most frequently did this happen to me when searching in that wonderful store of antiquity, our dear old Bible.

EPH. M. EPSTEIN, M. D.

Vermillion, D. T., February 7, 1885.

THE ALTAR AND PILLAR TO JEHOVAH.

IX.

The reader is requested to bear in mind that the object of this first division of our subject, "The Altar to Jehovah," is simply to show that the Great Pyramid was truly an altar—in its battlemented condition an altar of self-sacrifice, and in its finished or tombic condition a memorial altar, or altar of witness—and that whatever is said respecting the builder of it is incidental, being involved in the exposition of passages of Scripture touching the utilitarian objects of its construction. The Scripture at present under consideration is Jehovah's address to Shebna in the twenty-second chapter of Isaiah, beginning with a clear proof of the convertibility of a treasure-stronghold into a monumental tomb. Having considered some of the reasons for believing that the person with whom Shebna is compared was Joseph, and that his "sepulcher on high" was the king's chamber in the Great Pyramid, it is now in order to enquire what is meant by

(9) *His Habitation in a Rock.* A sepulcher for the dead and a habitation for the living are in a manner the correlatives of each other; and if the "sepulcher on high" was the cavern-like king's chamber, with its empty sarcophagus, it is natural to suppose that the correlative "habitation in a rock" was the cottage-like queen's chamber, with its empty niche. The only incongruity in this supposition is that the relation of the sepulcher for the dead to the habitation for the living, in respect to altitude, is the reverse of what is customary and seemingly proper; but this reversal of one of our most ordinary ideas of the fitness of things is to be explained by whatever adequate reason can be assigned for the half-finished condition of the subterranean chamber, showing, as it does, an abandonment of the use for which that chamber was intended, and a transfer of this use to the king's chamber, as indicated by the presence of the

granite sarcophagus in this chamber rather than in that. To any one who believes in the inspirational character of the Great Pyramid, the explanation of this anomaly very readily suggests itself. It is simply that the transfer was made, and that the sepulcher for the dead was exalted above the habitation for the living, by a man inspired with the grand truth of his own resurrection from the dead, as well as that of the patriarchs before him, through faith in the promised Redeemer, who said before his crucifixion, as truly as he says still, "I am the resurrection and the life; he that believeth on me, though he die, yet shall he live: and whosoever liveth and believeth on me shall never die."

A habitation for the living may also, I think, be very properly assigned to a life-like statue of the inhabitant, such as "the diorite statue," traditioned to have once occupied the niche in the queen's chamber, if I am right in identifying this statue with the co-called "statue of Cephren" in the Boulak museum. Such a statue, though as life-like as *Pigmalion's Galatea*, could have no use for air-channels, never having breathed the breath of life, and, therefore, being incapable of revival. On the other hand, a dead body, having once lived, might aptly represent the dead in trespasses and sins, and their capability of resurrection to newness of life through the regenerating influence of the Holy Spirit; and so the king's chamber, with the dead body in its granite sarcophagus, was furnished with air-channels, while the queen's chamber, with the diorite statue in its limestone niche, was furnished with none. Moreover, the queen's chamber, with its salt-incrusted vestibule, its walls of submarine limestone, its sunken floor and its depressed niche, speaks of the sadly remembered, conservative, fossiliferous past, all the more pathetically for its desertion by the life-like statue that once commemorated the presence of its mortal inhabitant. The king's chamber, on the contrary, above and beyond, regnant with the upheaved granite of its walls, of its raised floor, of its roof and chambers of construction, and of the raised block and uplifted portcullis in its antechamber, speaks of the triumphant and glorious future, of the resurrection and the coming of the Christ in his kingdom, all the more eloquently for the absence

of the prophetic bones that once occupied its granite sarcophagus. These contradistinctions between the king's and queen's chambers, including that between the dead body and the diorite statue of the treasurer who "hewed him out a sepulcher on high and graved a habitation for himself in a rock," seem to me very appropriately symbolic of the contradistinction between "the house of Joseph" and "the house of Judah."

But what proof is there that the traditional diorite statue in the niche of the queen's chamber was an actuality, and that it was sufficiently life-like and far-removed from monstrosity not to have been intended as an object of idolatrous worship, as some suspect it to have been? I have already intimated its identity with the Egyptian statue, or rather statue in Egypt, called Cephren's; but as to the correctness of this ascription, whoever will attentively consider it from the standpoint of philosophic and artistic criticism, must recognize in the so-called statue of Cephren such a wonderful superiority to all purely Egyptian types and works of art, and such a striking similarity in physiognomy to the descendants of Joseph through Ephraim and Manasseh, as to furnish the best of reasons for believing it to have been a work of divine inspiration, representing neither Cheops nor Cephren, but their divinely inspired prime minister, the Hebrew builder of the Great Pyramid. Cephren, having been the survivor of the good Philitis by more than forty years, must have been the Pharaoh to do him appropriate honors. For this reason I think that Cephren not only placed the body of Joseph in the coffin in the king's chamber, but also placed his statue in the niche of the queen's chamber, and that this became an object of idolatry under Mycerinus. I think, too, that when Rameses, the grandson of Cephren, became aware of the desecration of the Great Pyramid in the abstraction of the bones of its deified builder, he ordered a removal of the idolized statue of this august personage to Cephren's temple of the Sphinx, affording in this natural association of ideas equally natural reasons for the development of the supposition that the statue was Cephren's.

The necessity for an explanation of the fact that the statue in question is called Cephren's, whether it is identical with the tra-

ditional diorite statue in the niche of the queen's chamber or not, is the absolute absurdity of the supposition either that it was a representation of an Egyptian king or the work of an Egyptian artist. In this dilemma reason justifies us in considering it both the representation and the work of an inspired Hebrew. There is nothing more incredible in this than in the fact that the statue of Thorwaldsen was the work of his own hands. Such a juvenile stage of artistic development as that which the ancient Egyptians exhibited in their ambitious attempts at sculpture and pictorial representation—showing such want of all ideas of grace and rules of perspective, and so forcibly reminding us of the similar, though better productions of the Aztec relatives of the Egyptians in Central and South America—seems to me no less inconsistent with a rational belief in the so-called "statue of Cephren" as the work of an Egyptian sculptor than with a rational belief in the so-called "Pyramid of Cheops" as the work of an Egyptian architect. Considering all the artistic truth to nature wrought into the one, and all the mathematical truth to nature wrought into the other, the inspirational theory is the only rational explanation of either; and to whom can the inspiration be more reasonably ascribed than to "such a man" as the interpreter of Pharaoh's dreams? For the accomplishment of works four thousand years ago equal to the highest art and science of the present day, we may look on Joseph after his ten years' imprisonment on account of his purity and goodness, and enquire, in the language of Pharaoh, "Can we find such another as this, a man in whom is the spirit of the Gods?" (Genesis xli, 38.) Certainly the exceptional statue of which I speak is far more conspicuously superior to all unquestionably Egyptian statuary than the Great Pyramid is to all unquestionably Egyptian pyramids; and no one can recognize this fact without seeing that it is no more an image of Cephren than the Great Pyramid was the tomb of Cheops. Like the latter, it is "*in* Egypt, but not *of* Egypt."

Sir Henry Rawlinson, in his 'History of Ancient Egypt,' expresses the opinion that Cheops and Cephren, or Khufu and Schafra, as he prefers to call them, were the greatest tyrants that the world has ever known, earning the hatred and detesta-

tion of their subjects by compelling them to build the two oldest and greatest of the pyramids, for no other purpose than to entomb their royal corpses, in honor of their infamous lives. And yet, in spite of his natural expectation of seeing the features and expressions of a Nero or a Caligula in a reputed statue of one of these tyrannical monsters, this is what he says of it:

Shafra is the first of the Egyptian kings whose personal appearance we can distinctly and fully realize. Two statues of him, in green basalt, his own gift to the temple of the Sphinx, show him to us such as he existed in life, bearing upon them as they do the stamp of a thoroughly realistic treatment. The figure of the king is tall and slender, the chest, shoulders and upper arm well developed, but the lower arm and the lower leg long and slight. The head is smallish, the forehead fairly high and marked with lines of thought, but a little retreating, the eye small, the nose well shaped, and the lips slightly projecting, but not unduly thick; the chin well rounded, and the cheek somewhat too fat. The expression, on the whole, is pleasing, the look thoughtful and intelligent, but with a touch of sensuality about the under jaw and mouth. There is no particular sternness, but there is certainly no weakness in the face, which is that of one not likely to be moved by pity or turned from his purpose by undue softness of heart. (Volume I, page 57.)

Considering the demand of the moral nature in every true man for self-conscious consistency, I think it probable that Rawlinson's physiognomical judgment of the supposed statue of Cephren conformed, as far as the stronger part of his moral nature would allow, to his *a priori* judgment of the character of the original. Had he taken this diorite or greenstone statue, as I do, for an image of Cephren's prime minister, produced by the minister's own hand under the influence of the spirit of truth in filial loyalty to nature, it is likely he would have seen no "touch of sensuality about the mouth," and no occasion to remark that the face "is that of one not likely to be moved by pity," though he might have thought of it as belonging to one not likely to be "turned from his purpose by undue softness of heart," his purpose being the fulfillment of the designs of Heaven for the greatest good of the greatest number, and for the reestablishment of the church and kingdom of the Heavens on earth, in "the times of the restitution of all things."

From a utilitarian standpoint, the niche in the queen's chamber, with its width of over four feet to its height of thirteen feet on the sides, and with its depth of about three and a half feet to its height of fifteen feet in the middle, affords clear evidence of an intentionally grand and well-proportioned accommodation for a statue and pedestal of noble dimensions. Imag-

ining the statue standing in its place, the curious fact of its situation northward of the middle of the east wall may be taken as an indication of the direction from which the original came into Egypt, and in which his bones would return to "the parcel of ground" given him by his father Jacob in the land of Canaan. The diorite statue could easily have been introduced to its "habitation" ere the ascending passage was closed by the granite stopper, and more easily still when the Great Pyramid was in its queen's-chamber stage of construction. The only difficulty is that of finding a means of egress on the occasion of its removal from the Great Pyramid to the temple of the Great Sphinx. This must have been accomplished, if at all, by a withdrawal of the granite stopper, and this could have been effected by the same machinery which let the stopper into its present position, debarring access to the sacred remains of the honored prime minister from the time of their committal to the granite sarcophagus. My idea is that the machinery by which the granite stopper was carefully slid up and down consisted simply of a rope and pulley attached by its lower end to a ring in the upper end of the stopper, and by its upper end to a loop through the four-inch drill-hole of a certain granite slab fastened securely to the great step at the south end of the grand gallery. This granite slab, with the drill-hole in it, I deduce from the fragment described by Petrie on page 28 of his "Pyramids and Temples of Gizeh." By the supposed machinery attached thereto, as to the unalterably fixed point, the stopper could have been drawn up into the space between the ramps, out of the way of the passage of the greenstone statue from the queen's chamber to the temple of the Sphinx.

But Rawlinson says that to this temple Cephren contributed *two* statues of himself—two statues of one and the same person to one and the same place, at one and the same time. Is this reasonable? Is it not more in accordance with the fitness of things to believe that the person was the prime minister of Cheops and Cephren, and that of his two statues Cephren contributed one to the temple of the Sphinx, and the other to "the secret place" of the Great Pyramid, to signify the authorship of the two grandest monuments on the Gizeh rock by one and

the same inspired personage, and their intimate relation to each other as representing the relationship between the earth and the signs of the zodiac? I think so, and that when Ra-Tœses learned that his foster-relative, Ra-Mœses, had robbed the Great Pyramid of the bones of its inspired architect, and had despoiled it of its treasures, he said: "I will overtake, I will divide the spoil; my lust shall be satisfied upon them; I will draw the sword, my hand shall repossess." (Ex. xv, 9.) I think, too, that when Aseskaf, the last king of the fourth dynasty, learned of the overthrow of his father in the Red Sea, and saw the impossibility of repossessing the bones of Egypt's great benefactor, he ordered the idolized statue to be taken from the queen's chamber and transported to companionship with its mate in the temple of the Sphinx, where it would be free from the desecration thenceforth attached to the Great Pyramid.

If any one thinks that in the foregoing I have turned aside from my subject to find support to my theory of its connection with Joseph, let him consider the fact that among the thousands of statues in ancient Egypt the only ones "thoroughly realistic" were two in marked contrast with the absurd conventionality, or rather juvenility, of all the rest; and if of these two one can be shown to have been contributed by Cephren to the niche in the queen's chamber, let him ask himself if this one must not needs be very properly included in our identification of the queen's chamber with the "habitation in a rock" graved for himself by the treasurer with whom Isaiah compares the treasurer of Hezekiah. Of course, those who hold to the opinion that Cephren was the builder of the second pyramid, and that he could not have been one of the two kings designated in the "quarry marks" discovered by Howard Vyse in the first of the Great Pyramid's "chambers of construction," must needs consider it far from shown that Cephren contributed one of the life-like statues, either of himself or of somebody else, to the niche in the queen's chamber of the "Pyramid of Cheops." But if it be unreasonable to believe that Cephren contributed two statues of himself to the temple of the Sphinx, those who believe him to have been the proprietor of the second

of the two Great Pyramids ought to be able to find a niche therein for one of them, as also to show that he was buried in the sarcophagus therein, rather than in the outside tomb called "Cephren's," not far from the tomb of Cheops, as represented in the map of the Gizeh rock in 'Our Inheritance.'

After all this array of argument in favor of the habitation of the queen's chamber by a graven image of the inspired builder of the Great Pyramid, is it not condemned by the very first of the twelve curses commanded by Moses to be pronounced by the Israelites themselves from the top of Mount Ebal: "Cursed be the man that maketh any graven or molten image, an abomination unto Jehovah, the work of the hands of the craftsman, and putteth it in a secret place." (Deuteronomy xxviii, 15.) That this curse was directed against an extreme propensity of the Israelites to fall into a certain practice of the idolatrous Egyptians and Canaanites, that of putting the image of a deified hero in the "secret place" of his treasure stronghold, on the occasion of its conversion into his monumental tomb, I not only freely admit but earnestly maintain. For I also claim that the diorite statue in the "secret place" of the Great Pyramid, though the "graven image" of a hero, was not that of one intended to be deified and worshiped, and was not "the work of the hands of a craftsman," false to nature, like all the idols that were ever made, but was, on the contrary, the "graven image" of the world's most perfect type of the Saviour of mankind, wrought by his own inspired hands, under the influence of the spirit of truth, making it as truly a work of art, in distinction from the work of a skillful mechanic, as the most masterly statuary of the present day, and thus making it the very opposite of "an abomination to Jehovah." It had, indeed, become idolized as did the brazen serpent made by Moses, and a snare to the Israelites, but the maker "meant it not so, neither came it into his mind."

(10) *The sense in which the treasurer with whom Shebna is compared may have been said to hew out and grave his chambers in a structure of multifarious stones as in a solid rock.* To most readers of THE INTERNATIONAL STANDARD, the Great Pyramid was evidently intended to represent, in its perfected condition,

the individuality of perfection, or that of the self-existent being, the *I Am*, and therewith his perfect incarnation in humanity and his manifestation in the spiritual and material universe. Hence, though composed of a vast number of rocks, it is called in the sacred Scriptures, "the Rock," and it is thus referred to as a symbol of the triune Jehovah, the Elohim to be incarnated in the person of the Christ. For example, Moses says, "I will publish the name of Jehovah; ascribe ye greatness to our Gods; he is the Rock; his work is perfect." (Deut., xxxii, 4.) A great rock of perfect workmanship and individuality. David says, "Jehovah is my Rock, and my Fortress, and my Deliverer: the God of my Rock; in him will I trust: he is my Shield, and the Horn of my Salvation; my high Tower, and my Refuge, my Saviour." (2 Samuel, xxii, 2, 3.) In Isaiah, according to the marginal correction, we read, "Trust ye in Jehovah forever; for in Jehovah, Jehovah is the Rock of Ages." (xxxii, 4.) To those who "flee for refuge" to the Saviour of sinners, He is "a hiding place from the wind, a covert from the tempest, and the shadow of a Great Rock in a weary land." (Isa. xxxii, 2.) In the literal sense of the term, the "weary land" was that in which the Israelites wearied of their hard bondage; was it not? That a literal rock, in the sense of a unity of structure, is referred to in these passages as a symbol of Jehovah, few will be disposed to deny; and that it was the great tower, altar, refuge, or the Great Pyramid, in the condition in which it was contemplated by the prophets, all who believe in "our inheritance in the Great Pyramid" will be disposed to admit. The "Rock of Ages" is the "Ancient of Days" and the "memorial to all generations." To represent the unity of the many members of the one body more perfectly, the Great Pyramid was clothed with a garment of casing-stones, so uniform in whiteness and so closely fitted to each other and to the stone of the chief corner as to give to the entire structure the appearance of a solid rock. Moreover, in order that the sepulchre and habitation for the dead body and diorite image of its architect might appear to have been hewn out and graved in this solid rock, their interior stones were so perfectly adjusted to each other, and so ed and polished to a common surface, as to be indistin-

guishable. These principles of construction, as well as numerous passages of Scripture, including those already quoted, are confirmatory of the opinion of Mr. J. Ralston Skinner and others, that the "rock out of the water," the symbol of Christ Jesus and of those who "follow him in the regeneration," constituting the Christ and his kingdom, was the Great Pyramid of Jeezeh.

The "hewing out and graving," by "line and plummet," in the rock foundation on which the Great Pyramid stands, was in a manner imitated in the mathematical passages and chambers of the superstructure, as it were in a crystalline growth and development of the parent rock; and seemingly in recognition of this synonymy in the Great Refuge representing the Christ, in contrast with the incongruity of a refuge of the sand-hill description, it is said in Isaiah: "Behold, I lay in Zion, for a foundation, a stone, a tried stone, a precious corner-stone, a sure Foundation: he that believeth shall not make haste. Judgment also will I lay to the line, and righteousness to the plummet; and the hail shall sweep away the refuge of lies, and the waters shall overflow the hiding place." (xxviii, 16, 17.) Finally, enquiring of Pharaoh's treasurer his object in "hewing him out a sepulchre on high and graving a habitation for himself in a rock," his reply appears to be, that he might represent the Christ both in himself and in the Great Pyramid—in himself "the stone, the Shepherd of Israel," and in the Great Pyramid "the Rock of Ages," the "refuge from sin," the "strong tower from the enemy;" also the great treasure-stronghold, "wherein are hid all the treasures of wisdom and knowledge" (Col. ii, 3); also the Great Monumental Tomb, from whose "chambers" and "secret place of the Most High" he might say to Israel, in the name of the promised Victor over Death: "Thy dead men shall live, together with my dead body shall they arise. Awake and sing, ye that dwell in dust: for thy dew is as the dew of herbs, and the earth shall cast out her dead. Come, my people, enter thou into thy chambers, and shut thy doors about thee: hide thyself as it were for a little moment, until the indignation be overpast. For behold, Jehovah cometh out of his place, to punish the inhabitants of the

earth for their iniquity: the earth also shall disclose her blood, and shall no more cover her slain." (Isa. xxvi, 19-21; and see Rev. vi, 9, 10.)

J. W. REDFIELD.

HEBREW METROLOGY.

The subject of Hebrew Metrology, as ordinarily thought of and accepted, is not to be touched on in this paper for want of space. It would at any rate, be but repetition of that which can be gleaned from many works.

Tentatively we have discovered that the *radius seconds* of the circle of 360 *degrees*, viz., 206,264.70+ seconds, practicalized in measure as 20.⁸²⁶⁴⁷⁰ imperial British inches, was an ancient Egyptian *cubit* value—the so-called *Nilometer cubit*. But in the numerical value of a proportion is the natural outgrowth or development of, geometrically, a *pi* value, wherein the *pi* ratio is 20,612 for circumference of a circle, to 6,561 for diameter. The proportion is this: 20,612 : 6,561 :: 64,800 : 20,626⁴⁷⁰. And, indeed, 20,612 was utilized in like manner as a measure in the same standard (British inches), so that 20.⁸¹² such inches made the length of another of the Egyptian cubit measures, the so-called "Turin" cubit. By actual microscopical tests by Bidone and Plana (Seyffarth) the Turin cubit measured 20.⁸¹¹²² British inches, and by Wilkinson the Nilometer cubit measured 20.⁸²⁵ British inches.

The application of these cubit measures to the best reported measures of the Great Pyramid, proves that the cubits were derived from the above formula; as to which the actual cubits referred to show so close an approximate.

The learning of the Egyptians was that of the Hebrews, and there is demonstration that the most sacred measure of the Hebrews was the Turin cubit and its derivative, the Nilometer cubit. From this proportion 20,612 to 6,561 (which was es-

teemed in Holy Writ as true *pi*, and beyond doubt is*) the modified form of 355 to 113 is to be obtained. (See 'Crown Jewels of the Nations are Their Measures.') From these two ratios, viz: 6,561 to 20,612 and 113 to 355, the entire system of sacred metrology of the Hebrews took its rise, as is found demonstrated in the Hebrew text of the Holy Bible, especially in Genesis and the five books of Moses. One may imagine how sacred these measures must have been esteemed, when it can be said that on the ratio 113 to 355 rested what is called in the Sacred Record the "*Man even Jehovah*" measure (Genesis iv, 1), and that this rested for its origin upon the radical one of 6,561 to 20,612.

The interior, or sacred metrology, was not open with the Hebrews any more than with the Egyptians. To illustrate this: as said, the Nilometer cubit is found to have been 20.⁶²⁶⁴⁷⁰ British inches in length; but if an Egyptian cubit stick of this length, or of the length of 20.⁶¹² of such inches was examined it would be found that no division of the same would show any relation whatever to the British inch, or any denomination of measure founded thereon, as the foot, etc. Thus the workman would be in complete ignorance of such relation as belonging to the measure he was using.

The secret, as we have empirically and tentatively discovered, lay in this, viz: the knowledge and use of the Imperial British inch, and the denominations based on it, existed as a knowledge separate and secret and sacred. Either of the cubits mentioned was known, to those possessing this secret, in its totality, to be the one 20.⁶¹² of such secret, sacred inches, and the other 20.⁶²⁶⁴⁷⁰ thereof; and from these, by the transference of certain uses of the cubits themselves into this new realm of measure, an especial interpretation, perfect in its coherences and applications, as, for instance, to astronomical times and cosmic distances, etc., was made.

As to metrology: Instead of a valuable adjunct to the Biblical system, having mention here and there in the Sacred Text,

*It may be interesting to those who are not aware of the fact to know that Professor Roche of Philadelphia, has, by the simplest application of the rules of Euclid, shown geometrically the exact equality of a square for any given circle in area; and this shows essential error in what is called established π .

the entire text of the Holy Writ, in the Mosaic books, is not only replete with it, as a system, but the system itself is that very thing, *in esse*, on which, and out of which, and by the continuous interweaving use of which the very text of the Bible has been made to result, as its enunciation, from the beginning word of Genesis to the closing word of Deuteronomy. For instance, the narratives of the first day, of the six days, of the seventh day, of the making of Adam, male and female, of Adam in the Garden, of the Garden itself, of the formation of the woman out of the man, of the extension of time to the flood with the genealogy, of Ararat, of the Ark, of Noah with his dove and raven, of the space and incidents of Abram's travel from Ur of the Chaldeans down into Egypt before Pharoah, of Abram's life, of the three covenants, viz: with Noah, with Abram, and at Sinai, of the construction of the Tabernacle and the dwelling of Jehovah, of the famous 603,550 as the number of men capable of bearing arms who made, with their families, the exodus out of Egypt and the like—all are but so many modes of enunciation of this system of geometry, of applied number ratios, of measures and their various applications. This system embraces, for a part thereof, that same one which we find conclusively to be embraced in the structure of the Great Pyramid.

This system is a language in, of and by itself, which, moreover, embraces much which at first seems apart and separate from the discussions of exact science and astronomy, viz: for example, man in his various conditions and relations to what we call God, and also to nature, especially in the department of the exertion of the parturient energies. The reading of this language is an outgrowth from, in harmony with, and partly determined by, the visible and first face text. To the extent to which this language was known among the Jews, the learning and teaching thereof was called Cabbalah.

In the narrative form man himself, as the Adam, the archetypal man, the Adam Kadmon, was taken as the grand representation and containment of this entire system. In himself he was considered as the reflection of the Component parts or nucleations out of the Willing, Intellectual, Unknown, Incompre-

hensible First Cause; and thus became, in substance, thought and conception, the exponent as to all that came within his knowledge of that First Cause as to the phenomena of its operations; Itself thus, in him, becoming personal out of the impersonal. Hence in and of himself he contained this very system, which became in the text of Holy Writ, expounded in its chief words of nomenclature through himself and his names. As the First Cause was utterly unknown and unnameable, such names as were adopted as most sacred, and commonly made applicable to the Divine Being, were, after all, not so, but were such manifestations of the First Cause, in a cosmic or natural sense, as could become known to man. Hence these names were not so sacred as commonly held, inasmuch as with all created things they themselves were but names or enunciations of things known, either by experience or revelation. The ratios to which belonged 20,612 and 20,626 were those from whence came literal and matter of fact measures, which, in turn, took names from the members of the man. Thus the Hebrew system of measures rested on the thumb's breadth, the digit, the palm, the span and the cubit. These measures were made, by a beautiful mode of construction, to coördinate measures of space with those of time. By the very fact that they borrowed from a man his members as a mode of nomenclature, so in the comprehensive term man himself, in the numbers of his name, viz: 113 was found a typical and subordinate source or mode of measures, peculiar to themselves, in use and application and intendment. To somewhat explain this, let us refer to the canon of architectural measures by Vitruvius: Suppose the circle of the base of a column, for esoteric measures to have been taken from the form of a man stretched out on the ground looking upward, so that taking his navel as a center, the circumference line was made to touch the extremities of his outstretched fingers and toes. Now this man, thus occupying this space, might be held to be the typical or -man measure of the base of this column, out of which and constructed with which should belong the attending circumstances of height, shape, capital, grooves or flutings, *et cetera*, of the column; and all this to grow out of the ideal and merely abstract number of his name,

irrespective of whatever actual measures might be given to such a column, as so many cubits, palms, digits, or what not. Thus this column, irrespective of its actual measures, could be read in terms of its ideal abstract typical ones, as for instance: *Man* is 113; this is diameter to 355 for circumference, and 355 for one thing indicated the measure of the lunar year (*Shanah*) in the natural measure of days, and at the same time was the proper name Pharoah. So, also, 355 is the outgrowth of the use of the word *dove* in the flood narrative, for its value is 71, it is used five times and $71 \times 5 = 355$. Now, to resume, suppose that for height the base of the column, or man measure, should for this purpose be taken for the length of the foot of the man, and by a rule of construction the height of the column should be taken as six times the length of the foot. Thus, the base being 113 (for *man*) then the height would be $113 \times 6 = 678$; and this is the value of the letters used for that other bird mentioned in the flood narrative in the expression or word, *ath-li'orebu* (*sic*, in the text, as connected by hyphen) "*and-the-raven*," the values of the letters of which give as their sum this same number 678. Thus one can see that running along with actual measures is a typical system and use of same. This raven use of the numbers 678 is of great significance and found in various places; for instance: We have it first as the prototype in the flood narrative. We also have it as the deepest underlying key to Grecian architecture in its inception, and, moreover, Rawlinson, in his 'Herodotus,' says that the word is that from whence the name Europe. We have it to day, in such uses as causes the utmost amazement and surprise, at the continued familiar use to some who must now be initiates of this kind of learning. But what is of the most interest to us is that the use crops out in the Great Pyramid. One of the most wonderful places in the structure is found in the attainment of the surface of the great step, where one arrives to the plane of the floor and open entrance to the Holy of Holies, or the king's chamber. The height of the grand gallery from the face of this step is 339 British inches. This is radius to a diameter of $339 \times 2 = 678$ inches, or this very raven number. The radius is taken to show division into two parts, a favorite use, which are 1065 each.

For the ratio 113 to 355 multiplied by 3 equals 339 to 1065. Now the numbers 1065 are the significant ones of Jehovah's name, viz.: *jod, vav, hé*, or 10 and 6 and 5, which the rabbin's extol so beyond all other numbers and say that by their uses and permutations, under the law of *T'mura*, the knowledge of the entire universe may be had. The entire circumference will be $1065 \times 2 = 2130$, of which 213 is the factor with 10; and 213 is the first word in Genesis, viz.: *Rash*, or *Head*, from whence the entire book. By one of the permitted changes 1065 becomes 1056, and in this we have the numbers of Mt. Sinai and those to show the descent thereon of Jehovah in a bush of fire, the chief object of the use of which numbers, so arranged and applied on the Mount, is to afford as a result the *exact* astronomical value of the lunar year, viz.: $354^{.3670548}$ days—that is, in natural measure. Besides this, and what is most remarkable, is the fact that these same numbers, under the letters given, were introduced into China some twelve centuries prior to the Christian era and taught by Wang, and quoted by Saoutz, the preceptor of Confucius, as the root and base of all knowledge, under the form of an enigma or riddle.

The distinction between the two branches of this general system, viz., between the actual measures from the ratio 6561 to 20612, and the ideal abstract *man* measures, from the ratio 113 to 355, gives rise to two great and well settled distinctions in the Mosaic Books. As a use, derivative and reduction from the first, we have the great God-word *Elohim*. The running characterizing small numbers of this name, in Hebrew, are 13514, which, placed on the bounds of a circle, will serve to give expression to the measure of the same; for they can be read as 31415, which is what we to-day call the value of π , and is so significant as to be used in astronomical tables as a *constant co-efficient*, that is, it is the numerical value of the circumference of a circle whose diameter is *one*; hence the Biblical expression by the rabbins: "His name is *Echod*," or *One*. This is the distinctive, so-called, *Elohistic* branch. As a distinctive use under the second, we have the "measure of a man," or 113, which also is significant of a π value, inasmuch as it is diameter of a circle to a circumference of 355. But in its Biblical

origin, Genesis, chapter iv, verse 1, it is called the "Man Even Jehovah" measure; and this is obtained in this way, viz.: $113 \times 5 = 565$, and the value 565 can be placed under the form of expression $56.5 \times 10 = 565$. Here the *man* number 113 becomes a factor of 56.5×10 , and the reading of this last number expression is *jod hê vav hê*, or Jehovah. Hence this is the distinctive, so-called, *Jehovistic* branch of these books. The expansion of 565 into 56.5×10 is purposed to show the *emanation* of the male (*jod*) from the female (*Eva*) principle; or, so to speak, the birth of a male element from an immaculate source.

In *Al-Chasari*, by Hallevi, written in the twelfth century, the author clearly shows the distinction between the names Elohim and Jehovah, in this, viz., that the first is a generalized term, serving as a constant as entering into all created works and forms whatever, while the name Jehovah is a particular or discrete manifestation of most especial value to man because of His immediate intervention in and superintendence over man in all the most cherished details of his being, especially in the department of conception and birth, *i. e.*, as the energizing activity.

I now assert that what has been said can be proven to demonstration from the holy books, and then reinforced and confirmed by a multitude of supporting facts, scattered all along down through history and tradition. It all goes to show that the world of thought and study, through these thousands of years, has, in accepting the Biblical record on its first face reading only, been taking the *shadow* for the *substance*; and hence the interminable difficulties and unending changes of exegesis.

And in view of this, let me close this contribution with two quotations—one from Schopenhauer and one from Ralph Waldo Emerson.

Schopenhauer, in 'World as Will and Idea,' says:

In the idea of perception, illusion may at moments take the place of the real, but in the sphere of abstract thoughts (such, for instance, as compose the religious philosophy and Biblical exegesis of our day) error may reign for a thousand years, impose its yoke upon whole nations, extend to the noblest impulses of humanity, and, by the help of its slaves and dupes, may chain and fetter those whom it cannot deceive.

Ralph Waldo Emerson says :

The religion that is to guide and fulfill the present and coming ages, whatever else it may be, must be intellectual. The scientific mind must have a faith which is a science, at first cold and naked, a babe in the manger again, the algebra and mathematics of ethical law, the church of men to come, without shawms, psaltery or sackbut ; but it will have heaven and earth for its beams and rafters, with science for its symbol and illustration ; and it will fast enough gather beauty, music, pictures and poetry.

J. RALSTON SKINNER.

*THE CAMPAIGN OF MOSES IN THE EXODUS FROM EGYPT.

By Monsieur E. Lecointre, Engineer on the Retired Marine List and Officer of the Legion of Honor. Translated from the French by Mrs. A. M. Searles.

The expedition of Moses in the exodus from Egypt remains enveloped in a profound mystery that few have sought to penetrate. The divine intervention plays therein a role so grand that it absorbs our whole attention, and we scarcely turn our eyes upon the other interesting features of the narrative.

Nevertheless, God only comes to the aid of his people to save them from desperate situations where human aid is powerless. Thus, seven days after their departure, He opened for them a passage through the waves of the Red Sea—Salvation for Israel ! Chastisement for Pharaoh ! Twenty days later He sent the manna to save them from the pangs of hunger, and four days later still, He caused the rocks of Horeb to spout forth water to allay their thirst. But for the remainder, the people lived, marched and manœuvred under the orders of Moses, who consequently held the important post of commander of the expedition. If he has not spoken on this point, it is because he had received an order to write a book, destined to record for posterity the wonderful works of the Lord in behalf of his people, and not to give the history of the campaign. (Ex. xvii, 14.)

Interpreters have expended not a little time and ingenious research in attempts to discover the exact point where Moses

* This book has a preface by M. L. Abbe Moigno, of which a fine translation was made by Mrs. Emily Lewis, and was published in the July, 1883, number of the STANDARD.

crossed the Red Sea, and justly so, for if once this point is established, the days of rest marking the stations inevitably conduct them even to Mt. Sinai. Nevertheless, up to this time, this research has failed of success and still remains veiled in obscurity. Of all the solutions that have been presented thus far, not one offers incontrovertible evidence. In the January, 1881, number of the *Revue des Questions Historique*, the learned Abbé Vigouroux has pointed out the errors in each of these solutions, and rejected them all. But that which he proposes is very far from settling the question.

In the present work we propose to study this mysterious campaign of Moses, or rather the first part of it—that which conducts him to Mt. Sinai—for it is up to this point that the accounts seem to be at fault.

PART FIRST.—THE EXODUS FROM EGYPT.

In the second year of the great famine, which for seven years rendered Egypt and her neighboring countries desolate, Joseph induced his father and his brethren to come to the land of Egypt, settling them in the land of Goshen. There they multiplied exceedingly, and in after years their descendants were oppressed by a later Pharaoh, to whom Joseph was unknown. He was, as we shall presently see, the founder of the nineteenth dynasty. Seeing them increasing so rapidly in number, he began to fear their prospective power, and therefore wished to enfeeble them and to reduce them to slavery. This oppression was continued by his successors, who employed them to build the great monuments, the ruins of which still cover the land of Egypt.

Finally Moses received from God, on Mt. Horeb, the commission to deliver his people and to conduct them to the land of Canaan. In consequence of the ten plagues with which he smote Egypt, he acquired considerable influence, and at last obtained, through the terror of the reigning Pharaoh, permission to depart. At midnight on the fourteenth of Abib, corresponding to our March, the signal was given. Early on the morning of the fifteenth they left their homes, and putting behind them the whole land of Goshen, they encamped the first

evening at Succoth, and the second at Etham, at the entrance to the desert. There Moses received the order to change the route and to encamp on the Egyptian bank, at the foot of a certain region called Pi-ha-hi-roth, between Migdol and the sea, opposite Baal-Zephon, where, some days later, they were surprised by the army of Pharaoh. It was there that Moses stretched forth his hand over the waters, which were divided, giving passage to the Israelites but engulfing the Egyptians.

Such is the resumé of the facts. To reconnoiter these places and review the action, the most rational method would be to collect the references scattered through the sacred text, then search for the places—in a country well known to-day, thanks to the constructing of the Suez canal—to which these names are applied. The Bible and geography will be our sole sources of information. We shall lay aside the pretentious traditions and etymology which have played a role more or less important in past accounts.

The tradition does not exist among the Jews outside of the Bible and the Talmud. How we wish it had been preserved among the people who have come in such numbers to replace, in the land of Egypt, the sons of Pharaoh. As to the spelling, here is an example of the results to which it has led. What does the word Pi-ha-hi-roth signify? We know not whether it is a common or a proper name, whether it is Hebrew or Egyptian. One knows very little of the first language, and still less of the second. So much being granted, let us hear the commentators.

Dom Calmet, in his commentary, considers it a proper name, but at the same time states explicitly that different versions have made it a common name, and have translated accordingly the passage, *Venerunt contra Pi-ha-hi-roth*. The Septuagint says: "They came opposite the market town;" the Arabic, "to the gate of Bébélah;" the Syriac, "to the mouth of the ditch, or trench." (*Ostium fossati*.)

Pere Sicard and Pere Pujol take the latter definition. "Thouaireq," says Pere Sicard, "is the same word that in the Bible is called Pihahiroth; I find the proof of it in the Arabic; in He-

brew it signifies 'the mouth of the hole.' Thouaireq in Arabic means 'many little holes, ditches or canals.'"^{*}

Pere Pujol is not less firm in his convictions. He says: "The Arabic names encourage me by their eloquent significations to stand by my convictions. Thouaireq, that is, 'the ditches, the canals,' and Pihahiroth is by the ancient Syriac very properly rendered *ostium fossati*."

Unhappily Moses says: "*Omnis equitatus et currus Pharaonis et universus exercitus erant in Pihahiroth*"—"The cavalry, the chariots and the entire army of Pharaoh were in Pihahiroth"—which renders their solution ridiculous, for, according to Pere Sicard himself "Thouaireq is nothing but three or four small pits of salt water, confined in rocky reservoirs hidden in the sand, which are only three or four paces long, and much more shallow, and to which the passage is narrow.

Monsieur Brugsch understands it to mean the entrance to Khiroth, or gulfs of the lake Stirbon.

Dubois Aymé is of the opinion that Pihahiroth owes its name to this circumstance: "That it overlooks the entrance to the gulf," but he does not say why. Then he identifies it with Adjerout, "a name," he says, "analogous to the Hebrew *Hahiroth*, or the Egyptian *Adjerouth*. This Adjerout has a well of drinkable water, and it was for this single reason a place well known and named in olden times."

The Abbé Vigouroux thinks that this identification, "though not unquestionable, may probably be accepted as the true one."

But Linant de Bellefonds-Bey, who has for many years filled the position of minister of public affairs in Egypt, and consequently understands very well the language of the country, teaches us that "*Agerout*, in Arabic, signifies a place, or thing, barren, arid, uniform; for example, a young man without beard, or man who is bald-headed is called *Agerout*. *Agerout* is a modern fortress, built upon a high, arid rock, three hun-

^{*}If the entrance or opening of the canals, may it not be that it is because of its situation on the shore of the Red Sea that it received its name? May not the water from the Red Sea at that time have been used for irrigation? I offer the suggestion for what it is worth, perhaps nothing.—(Translator).

dred and forty-four feet above the level of the sea, with a well dug in the rock two hundred and twenty-nine feet deep."*

Thus it appears that *Agerout* is a modern Arabic word not in accord with either the Hebrew or the ancient Egyptian, and, applied to a fortress, has simply the signification of the name of a chateau such as are common in France, like Chaumont, Calmont, etc.

Linant-Bey also gives his version of *Pihahiroth*, and it is not less singular. He says :

At that period the gulph reached even to lake Timsah, and consequently to Nefiche, where the Pihahiroth of the Bible was situated. The bay, or swamp of rushes, to-day is called Kroubet-el-bous, an Arabic name with the same signification.

Evidently there is nothing scientific in all this, and the only real information upon the localities that we shall be able to deduce, must come from the part they play in the action wherein they figured. Let us, then, review them, and note with care all that concerns each of them.

*See 'Memoire sur les Travaux Public Exécutes en Egypté,' p. 204.

[*To be Continued.*]

CHEOPS, GEEZEH AND CHEPHREN.

The symbolic signification of these words I apprehend to be the key to much that is dark as yet to the student of pyramid literature, and believing as I do not only in the general symbolic teaching of the Scriptures, but in the symbolic prophecies relating to Egypt, and notably Hesaias xix., 19, "the altar," and "the votive pillar"—"and that it shall be for a sign (or symbol) unto the Lord in a province of Egypt," it seems to me a matter of vital interest to know whether, perchance, God has not hidden in these much disputed terms, names, or appellations, as so many now fully believe he has, in the great stone "votive pillar," the secret of the cosmic universe, or at least the key to a better understanding of the symbol itself. I have found this to be true and wonderfully so of the patriarchal and prophetic names of the Scriptures. Take, for instance, the name of Jeremias. Interpreted it is the key-note to the harmony of the understanding of the whole book, as well as much else that is deep in the plan and purpose of God in his dealings with the nations. The analysis of the name is as follows: *Jeremias*—ie root of *Iemi*—to cause to go or send, *erem*—root of *eremoo*—to lay waste or desolate, and *ia*—root of *iaômai*—to heal—the same root as appears in *Iavah*, or Jehovah, which signifies "the healing breath" (or spirit). The whole meaning of the name Jeremias, "Send thou to lay waste and heal," or, possibly, if the breathing be smooth root *i* of *cimi*—to go, it would then read "Go thou," etc., instead of "Send thou," etc.

Now the analysis of the two Greek words Cheops (*Xeops*) and Geèzeh (*Jeèze*) is evidently as follows: *X* (a cross) the letter here used as a symbolic adverbial modifier of the verb root *ops*—its symbolic significance recognized as far back as history or tradition have carried antiquarian research, *i* the root of *cimi*—to be, being or existence; *ops*, root of the future of *Ôrao* meaning to see, here used as a verbal noun—the full form *ôpsis*

lit meaning the seeing, or the way to see, or the process of seeing, or that which enables one to see, a representation—often the human face. Whole meaning (the cross)—a symbolic representation of that which is (being).

Now recall to mind the fact that the significant name by which God announced himself to Habraām was *Ōdon*, The One Who Is, or The Being, and then the language of Paul to the Greek philosophers in explanation of who and what God is, "The One in whom we *live*, and *move* and exist" (have our being).

This leads us up to a more intelligent consideration of the next term in question, namely: *Jēze* or *Geēzeh*. Analysis as follows: *ge*, root of *gea*, contract *ge*—earth, the earth, as a whole, the planet earth; *ē*, root of *eimi*, to be, and *se*, root of *seo*—to seethe, or boil, or move with a rotary motion. Whole meaning: "An earth that is in seething (or rotary) motion."

Now, joining the interpretations of the two words we would have a thought in substance as follows: The Cheops of Geezeh is a "symbolic representation of an existing earth that is in motion." Then calling to our aid the assistance of revelation and assuming, as therein revealed, that all the laws or "first principles" of being or existence in this cosmos are analogous to the laws of being in another and higher cosmos or "order of things," is it strange that the searchers into the hidden mysteries of the Great Pyramid should claim that they have respectively discovered, according as they have sought, recorded or symbolized there in the stone the great "first principles" of both the natural and spiritual cosmos, the "times and the seasons," the cycles of the earth itself, and the cosmic arrangement of the Heavenly bodies in their cyclic relation to the earth itself, and to one another, man's destiny, present, past and future, and God's plan and purpose in this matter, the utility of revelation in metric standards, based upon great general principles, great in their simplicity and because they appeal to the average intelligence or universal acceptance or common sense of mankind? If, therefore, God has given us a symbolic teaching of "first principles" underlying the cosmic harmony of existence, animate and inanimate, natural and spiritual (and the very names themselves, in their etymological analysis, as I have shown

seem to indicate this), we will do well, I think, to encourage one another and in every way stimulate enquiry into this subject of vital importance. In this connection, and suggested by this thought, it may not be considered uninteresting to call attention to the significance of the name Chephren or Chephron, according to Herodotus, the son of Cheops, and his successor in rule. Chephren is the original Greek word, and the variation on the last syllable is dialectic merely. The derivation and interpretation is as follows: X, the symbolic cross, with all its wonderful emblematic import; ε, root of *eimi*, to be, and phren, the understanding, including all the faculties commonly denominated "head and heart." The whole interpretation, "a symbolic understanding of existence" (or being). If, then, the account of Herodotus in regard to Cheops, being the name of the person who not only built the Pyramid but closed the temples of idolatry for fifty years, be worthy of credence, we must conclude that this person took both these radical and important steps under the impulse of some sort of a religious conviction, and if his son for fifty-six years more perpetuated and emphasized the same purpose and rule, these names become very significant as the best probable or possible clew to this strange purpose thus worked out; and if, as surmised, these shepherd kings were prophetic seers and servants of God to supplement his revelation of himself in his written and spoken word, should we not moreover expect their work to have a name significant of its symbolic import and hidden mystery? Again, supposing these premises to be true, do not these interpretations exactly harmonize with the awakened expectations of common sense and common reason in regard to a subject that has been so long a mystery? If God were going to teach mankind in enduring symbol any two great truths, would it not be the fundamental facts and the rationale of his own existence and that of the universe in which man lives and moves and has his being? I think so, and, therefore, contribute these thoughts as suggestive aids to those who are better able to follow them out into their ultimate divergencies of true science.

CHARLES GARDNER.

PYRAMID NOTES.

The granite length of the floor in the Great Pyramid's "ante-chamber" is the most convenient dimension whereby to compare the relative lengths of the British and the Pyramid inch. Expressed in British inches, that floor length is $324 \div \pi$; in Pyramid inches, the same dimension is = the number of days in the year $\div 2 \sqrt{\pi}$. But that number being subject to variation, let us, for the moment, call it Y. Then granite length of ante-chamber,

$$\text{in British inches} = 324 \div \pi.$$

$$\text{in Pyramid inches} = Y \div 2 \sqrt{\pi}.$$

If the British and Pyramid inch were *equal*, we should have:

$$\pi : 2 \sqrt{\pi} :: 324 : 365.6000,$$

an equation which, by the way, yields the simple common fractional expression of

$$\sqrt{\pi} = \frac{324}{182.8} = \frac{81}{45.7}$$

a near enough approximation for most purposes,

being .17724288840, etc.,

instead of .17724538565, etc.

But Y is not equal to 365.6; and to get an exact value for it from the Pyramid, we have recourse to the grand gallery, where the extreme length in Pyramid inches is reported to be 1881.6 *exactly*, and also = Y^2 divided by $\sqrt{\pi}$ and then by 40. Hence the granite length of ante-chamber squared = $18816 \div \sqrt{\pi}$, that is, in Pyramid inches; so that $\frac{324^2}{\pi^2}$ British = $\frac{18816}{\sqrt{\pi}}$ Pyramid inches, and dividing by 48, $\frac{27 \times 81}{\pi^2}$ British = $\frac{392}{\sqrt{\pi}}$ Pyramid inches, or $\frac{3^7}{\pi^2}$ British = $\frac{7^{28}}{\sqrt{\pi}}$ Pyramid inches.

The numerical values can be as easily worked out with the larger numbers, but these last are interesting as the lowest in-

tegral expressions of the relation of the one "inch" to the other.

$$\text{Now } 18816 \div \pi = 10615.791204034 +$$

$$\text{And square root} = 103.03296173572 + (P)$$

$$324 \div \pi = 103.132403123548 - (B)$$

$$\text{And } B \div P = 1.0009651415057 +$$

$$\text{And } P \div B = 0.9990357889969 +$$

or showing that the Pyramid inch is 1 — 1003.6th longer than the British. (Mr. Latimer's theorems gave 1 — 1031.32 (?); and Mr. Baxendell, at p. 345 of Vol. I. of the STANDARD, brings out, by another hypothesis, 1 — 989.2).

As the Pyramid inch is the 500-millionth of the earth's polar diameter, the length of the axis in "British inches" of the above value will be $500,482,570.75 = 41,706,880.9$ feet = 7899.03047 miles.

JAMES SIMPSON.

March 7, 1885.

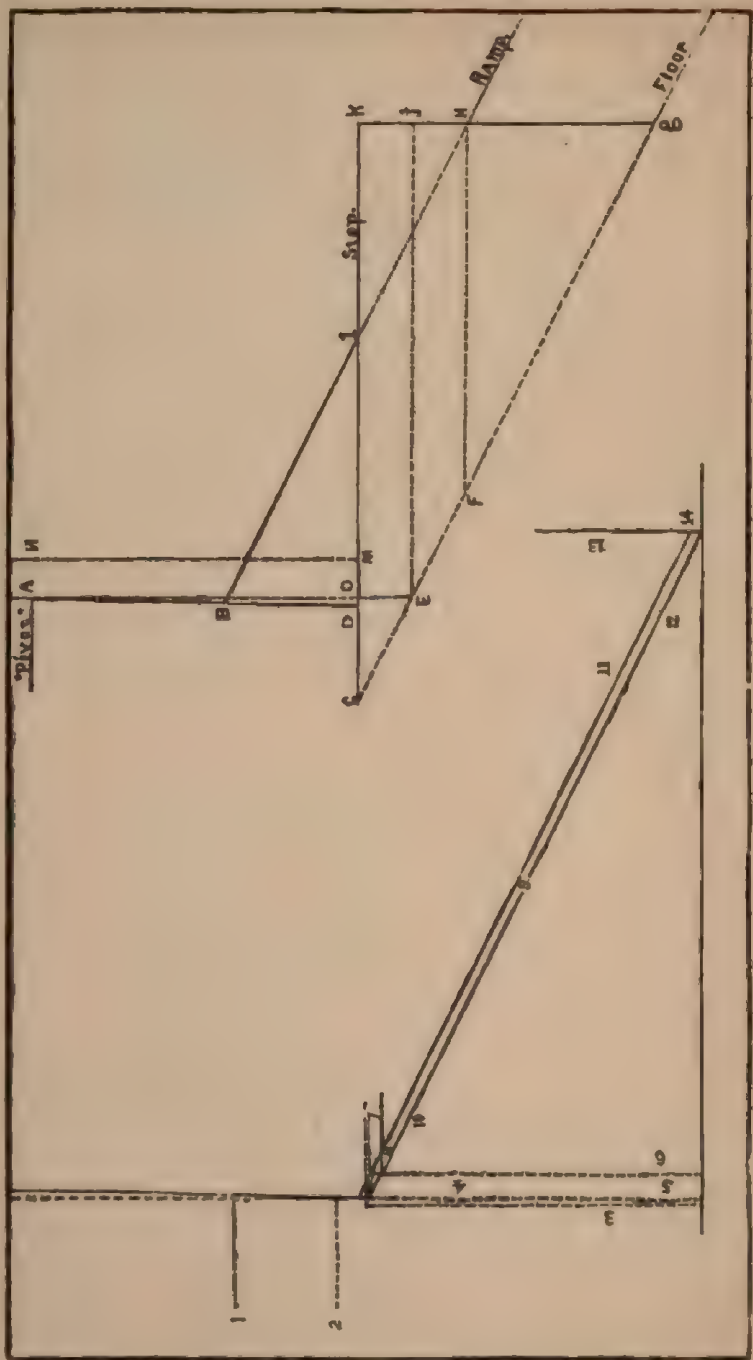
THE TWO WITNESSES: THE BIBLE, THE GREAT
PYRAMID.

By R. Courtenay, Bombay Civil Service. Bombay, 1884.

Professor Piazzi Smyth has forwarded us a copy of this pamphlet, upon whose title page is indorsed in his handwriting, "A beginning only, but a splendid beginning. C. P. S."

The author of the pamphlet finds, in the dimensions of the grand gallery of the Great Pyramid, a record of lunar periods, and a repetition of the ominous 666 of prophecy. Then, counting a Pyramid inch for a year, he discovers the lines and intersections of lines which exactly mark the dates of the momentous events in history corresponding with the prophetic periods of Daniel's prophecy; also other lines which, reasoning from analogy, must indicate the termination of the unfulfilled periods of Daniel and Revelation. The author's claims are summed up by himself after this fashion:

"In the foregoing pages I have endeavored to keep as close as possible to actual measurements, and to alter them (even then only to the most trifling extent) only when they differed amongst themselves, and when the aid of theory had to be invoked to determine toward what precise quantity they all tended. With one solitary exception—that of the battle of Waterloo, which was absolutely required to serve as a fixed point in chronology—history has not influenced in the smallest degree the determination of any length or height or angle, and yet from the Pyramid has been evolved a long series of events, the most important in the history of the world since the beginning, more than two thousand five hundred years ago, of the Times of the Gentiles, viz: the era of Nabonassar, the fall of Nineveh, the union of the crowns of Media and Persia under Cyrus, the very day of the accession of Alexander the Great, the birth of our Blessed Lord, and his crucifixion, the birth of Mohammed, the taking of Jerusalem by Omar, the battle of



KEY TO DIAGRAM.

GRAND GALLERY.

- 1.—Whole height above step, $66.6'' \times 5 = 333''$.
- 2.—"Pivot" height, $66.6''$.
- 3.— $840''$ height of step.
- 4.— $833.333''$ to floor line.
- 5.— $826.85647'' = 28$ lunar months = height of ramp.
- 6.— $803.802755''$ height to foot of step.
- 7.— $\left. \begin{array}{l} 6.666666'' \\ 29.5305885'' \end{array} \right\} 36.197255''$ full height of step.
- 8.—Floor line extended to level of ramp, $1866.1926''$.
- 9.— $1814.161616''$ to foot of step.
- 10.— 1895.8578 length of floor produced to level of step.
- 11.—Ramp.
- 12.— $26^\circ 18' 0''$.
- 13.—North end of Grand Gallery.
- 14.— $23.053728''$ height of ramp.

GREAT STEP.

- ad*. South wall of Grand Gallery impending 1° .
aoe. Perpendicular from pivot to floor produced.
ms. Perpendicular from south end of roof.
gh = $36.197255''$.
gj = $29.530588''$.
jh = $6.666666''$.
gh = $23.053728''$.
ad = $66.6''$.

Angle of inclination of floor $26^\circ 18' 0''$

Angle *dao* about 1° , or sine of *dao* = $\frac{7}{66.6 \times 6}$.

do = $1.1666''$.

dh = $60.91726''$.

dm = $5.833''$.

mh = $55.08393''$.

Inclined height of south wall $66.6'' \times 5 = 333''$.

Floor from foot of Gallery to *g* dates June 18, 1815.—Battle of Waterloo.

Floor to *g* + *mh* dates July 18, 1870.—Infallibility of Pope proclaimed.

Floor to *c* dates February 27, 1897.—End of Times of the Gentiles.

Christian Era, A. D. 1, April 20, Friday.—Birth of our Saviour.

Crucifixion, A. D. 34, April 20, Friday.

Floor from foot of Gallery to *f* dates June 29, 1867.—Celebration at Rome of Eighteenth Centenary of Martyrdom of St. Peter.

Waterloo, the eighteenth centenary of the martyrdom of St. Peter, the fall of the Pope's temporal power and the proclamation of his infallibility.

"I have shown that the book of Daniel and the Great Pyramid are one, and that both point emphatically to 1897 as the termination of the Times of the Gentiles. Far be it from me to assert, that in that year 'the world will come to an end.' I look for that event to happen not before but after the millenium, and even then, when this world has been renovated and purified by fire, 'we, according to His promise, look for new heavens and a new earth wherein dwelleth righteousness.' But I do expect that in 1897 the Turks will have been expelled from Palestine."

This pamphlet from the antipodes, though short, (twenty-three pages), is evidently the result of deep study and research, and is well worthy of careful study by every student of the Great Pyramid and every advocate of the Anglo-Israel theory.

SYNOPSIS OF MR. COURTENAY'S THEORETICAL DIMENSIONS OF THE
GRAND GALLERY (PYRAMID INCHES).

1. Height of step above the level of floor at entrance of gallery $= \frac{2520''}{3} = \frac{360 \times 7}{3}$ = number of days in $\frac{1}{3}$ of a "great year" = 840.

2. Height of produced floor plane at the point directly below the "pivot" point of south wall of gallery $= \frac{2500''}{3} = 833.333''$.

3. Difference of level between the latter point and the surface of step, 6.66''.

4. Height from foot of step to the $833\frac{1}{3}''$ level of floor (2), $= 29.530588''$ = number of days in one lunar month.

5. Height, from base of gallery, of intersection of ramp with north face of step, $826.85647''$ = number of days in twenty-eight lunar months.

6. Angle of inclination of gallery floor, $26^{\circ} 18' 0''$.

7. South wall of gallery is "pivoted" from a point 66.6'' above the step, and

8. It leans over at an angle whose sine $= \frac{7}{66.6 \times 6}$.

9. Height of south wall above step measured on the incline, $66.6'' \times 5 = 333''$.

10. Length of gallery floor up to foot of step, 1814.161616''. This is the author's starting point in chronology, for he takes this to denote June 18, 1815, the date of the battle of Waterloo.

11. Floor plane produced strikes the level of step at a distance from the foot of gallery, which would indicate the date February 27, 1897. This is taken to mark the end of the Times of the Gentiles. The beginning of the Times of the Gentiles dates back two thousand five hundred and twenty years from this, or 625 B. C., when Babylon rose to empire; and the "midst of the week" coincides with the historical date of the taking of Jerusalem by Omar, in A. D. 637.

J. H. Dow.

THE ARK OF THE COVENANT, THE PYRAMID AND FREEMASONRY.

"The Ark of the Covenant." Where is it? There have appeared in the columns of *The Messenger* several articles from the commencement, setting forth with a good show of probability that the Prophet Jeremiah brought the Ark of the Covenant with him from Jerusalem, which, no doubt, he did; but did he ever get further with it than the land of Egypt, or at the border thereof? Jewish history fully agrees Jeremiah hid it somewhere.

We read in the volume of the Sacred Law, at the time of the Babylonian captivity, great clemency was shown to Jeremiah by the conquering hero, Nebuchadnezzar, and never was prophecy more literally enacted and fulfilled than when Jeremiah left Jerusalem, with the young and beautiful daughters of Zedekiah, and the treasures belonging to the temple, with many emblems most sacred to the children of Israel. I must, however, in a measure, take some exceptions to the received opinion of some, that the Ark of the Covenant will be found in the vaulted chambers of "Tara's mounds," county of Meath, in the north of Ireland. The whole province was renowned as a distinguished place. "The people of Ulster were more renowned and were distinct in race, religion and enterprise, and they were called Fir Bolgoes—that is, the 'Divine Felles.' Historians Tigermach and O'Flaherty say about the seventh century B. C. they were superior in architecture and wonderful in their skill and use of metals, tracing their skill and ability, wisdom and renown from the east, even among the Chaldeans, the Uhesdim, Uhesed, Trustworthy (or modern Freemasons). A part of the sixth and on through the fifth century B. C. "a great man appeared who virtually ruled Ulster, not as actual king, but the king had to acknowledge his authority." His name was Ollam Folla. He had a beautiful princess, Tea Tephi, with him from the east. Eochaid, the king, married her with great pomp and ceremony, changing the name of the domain where he lived, Lothain Croffin, to Tara, and by the ruling of Ollam Folla had the idolatry of the people changed to a pure worship, and in honor of Tea Tephi the renowned halls of Tara were built.

The conclusion, therefore, is, Jeremiah was the Ollam Folla, and he was the custodian of and brought many records and traditions with him of great value and priceless worth, with evidences of identity and renown, and many of them rest at Tara to this day, but that the Ark of the Covenant, the tables of the law and the tabernacle are buried or hid up there, in damp, vaulted chambers, subject to easy decay, I have considerable doubt. To make an assertion is one thing, but to give satisfactory proof to the contrary after the lapse of as many hundreds of years and history so obscure, is quite another thing.

I put forward a hypothesis last fall, to illustrate that the Ark of the Covenant was in the Pyramid, what position it occupied, and how it got there. I will now repeat what I then said, with still further evidences of a constructive character to give proof the Ark of the Covenant with its belongings was deposited in the Great Pyramid of Jeezeh in the land of Egypt. I will give good authority, if not proof direct, found in *Macca-bees ii, 4-8*. In the *Apocrypha of the Sacred Law*, if it lacks inspired authority it has weight, we read: "It was also contained in the same writing, that the prophet, being warned of God, commanded the tabernacle and the ark to go with him, as he went forth into the mountain where Moses climbed up and saw the heritage of God, and when Jeremy came thither, he found a hollow cave, wherein he laid the tabernacle and the ark and the

altar of incense, and so stopped the door. And some of those that followed him came to mark the way, but they could not find it, which, when Jeremy perceived, he blamed them, saying, as for that place, it shall be unknown until the time that God gather his people again together, and receive them in mercy. Then shall the Lord show them these things, and the glory of the Lord shall appear, and the cloud also, as it was showed unto Moses."

There can be but little doubt that this quotation has reference to no other than the Pyramid side, his climbing up the mountain. It might well resemble a mountain to those who had only seen the hills or small mountains about Jerusalem, and at this time the Pyramid had been built about one thousand five hundred years, free from damp or mildew, or indeed anything that would suggest decay. Moreover, Jeremiah, acted under inspiration, and perceived the opening in the side; for up to this time it had been used for astronomical observations without doubt. Let that be as it may, little skill would be required—after depositing such things as were necessary and not wanted whither he was journeying—to fit a stone in the cave's mouth, as it was called, and so defy the search of the after-comers to find the place of concealment. Would it be as easy to stop the mouth of a cave in the side of what our conception would be of a rugged mountain, and so defy detecting the closed door? I think not.

If we review this Pyramid question fairly, and extend our researches to the many probable significations applicable to the inside construction of the passages and chambers, apart from the intricate calculations of time and space so elaborately worked out by Professor Piazza Smyth, F. R. A. S., and astronomer royal for Scotland, in his work 'Our Inheritance in the Great Pyramid,' I say, apart from these abstruse calculations, we may then in bewilderment ask how was the bottom part of the grand gallery constructed to give the information of its removal, and that by removing the sloping slab forming part of the floor to grand gallery it did reveal the entrance passage to queen's chamber, and again the question will arise, why so constructed? Every part so far has a direct meaning in geographical, mathematical and other proportions, yet this removal did not interfere with these calculations; that it was so constructed no one having made it any study will doubt, and the removal of all parts indicated were taken clear away, according to the original design of the architect or builder, little or no damage was inflicted on the adjoining parts. It next involves the question, when did these operations take place? I contend the quotation referred to gives very striking evidence in the direction of Jeremiah's deportation from Jerusalem to Egypt, in which direction he went, and being inspired by the Great Architect of the universe, he would be directed to a place of safety, for at least the more bulky portions, such as would be required or necessary, until the return of his gathered or chosen people, but the less cumbersome he no doubt took with him to the end of his journey, the north of Ireland, "the Gates of the Sea;" and there without doubt whatever evidence of identification he had with him he would most sacredly find a place for them, of close and lasting concealment, "until the latter days when knowledge shall be increased."

If Tara's Mounds should have been opened five hundred, or two hundred and fifty, nay, only fifty years ago, the characters, or hieroglyphics, could not, in all probability, have been fully deciphered. Be that as it may, the time is not far distant when great corroborative evidence will be forthcoming, the sanction may be obtained from the owners of the land, with the government authority, when such explorations will be made, and such indisputable testimony will be brought to light as will astonish the world. Having then ocular demonstration, with profound solemnity and reverence will these hid treasures of the past be acknowledged, and they will be the great agency to cause atheism, with all other isms, entire collapse. These evidences of Holy Writ will make the most sceptical yield, stand at bay, and in awe of such proof admit the past history of our ancient tribes and peoples as recorded in Holy Writ.

In my humble opinion Tara's mounds will be the first move towards identity proof.

There is little doubt records will be found of such a nature as will open up the path for future development, the better for retracing the direction in which Jeremiah came to the shores of Ireland from the east, or the last place recorded of him in the land of Egypt, and there, in that land, will be unfolded the oracles of God and his dealings with his chosen people. The way is most marvelously opening before us by the stretched out arm of the Almighty, and his chosen people are the instruments in his hand to develop prophecy, which, when it has developed and become history, is discernible; and not until then can we poor, short-sighted mortals see what is our destiny. But we may look at that great mountain of stone and by its construction gain the information it teaches to the practical, operative man. There is much developed in the marked constructive formation of its several parts, showing very conclusively the position of the undiscovered chambers and what parts must be removed to arrive at their entrances, without in any instance marring the structural appearance of the original design. It could not be more adroitly constructed to give its own information, and I am fully convinced that Jeremiah climbed up the side of this mountain of stone and entered the Pyramid on the north side, then descended till he came to the junction of the first ascending passage, at which time a portcullis was constructed across, and in all probability facilitated a forward movement up the first ascending passage, the top of which gained, opens on to the grand gallery, at the foot of which he would halt on gaining an upright position. A consultation with his scribe, Baruch, and others with him would follow, thus moving and working under Divine influences, he would at once understand the sloping slab stone concealing the passageway to queen's chamber. When all was cleared away a straight passage would be gained for passing along the treasured oracles of Jehovah to an inner chamber elevated on the twenty-fifth course of masonry, which, after one thousand five hundred years, must have been free from all traces of damp, or any element to effect or promote decay. On entering the queen's chamber the deep recess in the east wall, called the niche, would not only be visible, but inviting to still further research in that direction. I am much inclined to think the table stone, and next one above, set far back, was not then in position, but ready prepared and placed aside for the purpose of forming a plug stone, after the treasures had been secured in a safe and sacred depository on the other side, when these plug stones could be worked in with struts and wedges from the opposite or west side; thus all would be secure till the appointed time for them to be brought forth, to accomplish which purpose construction most prominently presents itself of no ordinary character. Indeed, nothing short of inspired teaching could plan for the future and suggest to form a square hole on each side of the chamber, north and south walls, at such an elevation that a strong girder of iron could be inserted, and with proper appliances these plug stones could be mechanically drawn from their present positions without causing the slightest damage to adjoining parts. Some may say all this is chimerical. If it is, there is practical construction to confirm and lead up to every movement of the operative mason being complete being dispute.

Jeremiah would not extend his researches further than was necessary to prosecute the inspired designs entrusted to him, and would at once leave the dark recesses and have a stone fitted to the mouth of the pyramid "or cave," and when finished smooth with the outside surface would indeed be a question for the after-comers to cope with, and so it remained till the time of the forced hole of Caliph Al Mamoun, 820 A. D. Many have been the explorers since that time, particularly in the present or nineteenth century, most notable of whom is Professor Piazzi Smith, F. R. A. S., Astronomer Royal of Scotland, to whose work, "Our Inheritance in the Great Pyramid," the world is much indebted for its scientific erudition.

Let us now take another practical look inside, and closely trace and scrutinize the various parts made known to us by drawings and publications of most able writers and draughtsmen. We read that one hundred thousand men were employed twenty years

on the building of the Great Pyramid. We can, therefore, picture them swarming like bees inside and out, the nature and extent of the work admitting and requiring both should advance simultaneously where practicable; thus the drilling, boring, cleaning off and polishing all work below the surface level, could proceed with equal energy with all going on above. When, therefore, these operations were going on below, including the subterranean chamber, the men would work very compactly together and ventilation would become a great necessity, hence the "well," or air shaft, situated as near central as possible. Its form and position would indicate no small amount of engineering skill, and its use would be apparent and its continuation would exist even beyond the closing in of the stone covering of the ceiling or summit of grand gallery, at the top west side of which is left the same rough hewn hole, continuing some unknown distance among the cross stones over ceiling of king's chamber, all of which continuous ventilation was practically and positively required during construction to enable so vast a number of workmen to perform their allotted tasks throughout all the various passages and chambers, together with the immense quantity of material and plant.

We will next review the grand gallery with the ramp stones, and endeavor, in a practical and operative sense, to arrive at, or define, the constructive object of the socket holes and other parts now veiled in allegory, apart from the exquisite finish and mathematical proportions and time measurements, which are thus built into fact. I say again, apart from this calculation great skill and ability would be required to construct these overhanging side courses of stone, each stone being set in an oblique position, causing a strain on each overlapping course of stones as it progresses upward out of a perpendicular. To enable the operatives to construct with security, it would be necessary to frame strong trusses supported on stanchions and these set into the socket holes in the ramps, or sets-off, and secured to blocks in side holes (now filled in) to keep all rigid and secure from any unequal thrust on the incline. All these supports were, no doubt, so constructed to afford a clear passageway under, for the different operatives to pass and repass to the various localities in and about the works, at the same time not to obstruct ventilation. We are not aware how much constructive caution was necessary in this gallery, while we are ignorant of the formation or position of the other passages and chambers, the which we will try to examine and endeavor to trace, by their construction, the information they contain, and what was the intention of the original builders, and what they wished to make comprehensible when the set time should arrive when all would be made plain, and the words of the Prophet Jeremiah made manifest: "The great, the mighty God, the Lord of Hosts is his name. Great in council and mighty in work. . . . which has set signs and wonders in the land of Egypt, even unto this day. (Jeremiah xxxii, 18-20.

On arriving at the top end of floor line to grand gallery we meet with an obstruction, this step stone, three feet high, and practically of no utility, and over which is the lowest and most inconvenient passageway thus far penetrated, we are led to ask why is progress impeded at this most important point, when it leads to such extensive measurement and detail; but on further examination and scrutiny through this low passageway, we stand in the anteroom, on a portion of the floor formed of hard granite, fitted and let down in its place between the additional thickness or side slabs that partly case in the walls of the antechamber, already set in position, it being so constructed that no difficulty would arise in again lifting it up. No doubt such was the intention of the Master Mason, its construction giving its own information, besides every facility being arranged for the undertaking. The grooves in the side slabs pass down below floor level, giving access for grappling irons attached to a strong iron bar, or a pair of sling chains could be fixed, and by the aid of the granite leaf and screw appliances, so raised as to be removed and disposed of by the workmen. My impression is under this stone will be found a cavity, the floor of which most likely will be found level with the bed of step stone. When this is removed, together with the stone under the granite leaf, a fair height will be ob-

tained to passageway from grand gallery to antechamber, which floor line may follow on to king's chamber. I have little hesitancy in saying that there will be a far greater extent of exploration visible at the upper end of grand gallery than was found at the bottom end, under the guidance and direction of Jeremiaab. The next removal, according to progress so far made, will be the removal of the granite leaf, and here we may say are most remarkable construction and forethought. If the granite leaf had been constructed in one solid stone, it would not give out in such unmistakable terms its own information. As it is, it serves several important purposes, and when taken out it will still be a record of the sacred cubit, the fifth part of a cubit and the limit of our English measure, the inch. Previous, however, to raising and taking out this granite leaf or strut, between the side slabs keeping them in position, it may be necessary to put in temporary struts of timber in the other groves. Such a precaution may not be necessary. The slabs, however, casing side walls, will have to be brought forward in whole or in part. This effected will reveal the entrances to the long hidden, mysterious chambers. There can be no doubt, if construction goes to prove anything, and these displacements are effected with that freedom of spoliation that its several parts would indicate, the size of the antechamber would be increased materially, and, as far as we can foresee, nothing would be marred or displaced connected with the main structure. These excrescences being removed, much may be revealed; how much, it is not possible to say. But in view of the constructive parts, projections and obstructions, hinderances to locomotion when traversing the dark recesses from place to place, with those parts being separately formed, and placed, as it were, to cover some defect, or what would appear more rational, to conceal some secret formation in connection with the vast opportunity for some series of chambers most commodious in size. Again I might, in a structural point of view, make bold to assert there will be found a communication from the queen's chamber to those yet unexplored, thus a freedom of passageway and continuous circulation of air would be kept up for the craftsmen employed, which would not only facilitate passing to and fro, but would amount to almost a necessity when we consider the vast quantity of human beings breathing the same atmosphere in such close confined places, and having to perform their various handiwork, not only from day to day, but continuous from one year's end to the other, facing and polishing stone in all positions, that being a slow and tedious process under the most favorable circumstances, however, a continuous system of communication would be attended with great advantages, which are well known to those engaged on large and extensive works. The entrances to these communications, secretly closed, so far as we know, are hermetically sealed, the better for hid treasures; and if the oracles of God are concealed within, where, I ask, on the face of this terrestrial globe could any approximate receptary be found alike for preservation and safety.

Proceeding on, but still guiding our reflections into the most intricate windings of this most remarkable and scientific of all superstructions, we are led by our reflections to enquire; and it would be no great surprise to find another and a more noble entrance in connection with the other chambers hitherto unexplored, and the outlet (as was the north side) concealed from view. This must be left, however, to considerable speculation, nothing of a structural character giving any evidence of such important design, but the mind is led to think where so much skill and ability is present, more commodious and less cramped portals would be the chief considerations and characteristic of such huge proportions, unless for small, compact chambers, hermetically sealed, with passages of like nature, intended for development in after ages, but hitherto veiled in allegory, yet illustrated by symbols of most astute learning, philosophical research and deeply matured plans. Some of these plans suggest as little space as possible, should be exposed to atmospheric contingencies after all was complete and the workmen discharged. A few congregated now inside, the atmosphere soon becomes oppressive, as most tourists and explorers can testify. I may then safely ask, how would it fare with near an army of men

inside, if ventilation had not been provided for from near the apex of the building, along grand gallery, down shaft by well's mouth to junction of subterranean chamber and foot of passage scheme as far as we know at present? And here another most important part of construction seems to present itself, and occurs in the incomplete subterranean chamber itself, and its uses.

It would be a practical question, where did the water supply come from to carry on such ponderous workings? Much water would be required for preparing and setting the stone. It therefore follows, in a practical sense, that the sinking down in the centre of the subterranean chamber was actually a well of water in those days. On the other hand, it could easily be kept full of water by a syphon pipe along the continuous sloping passage down to it. It being central would most accommodate all parts of the building with the least loss of time. But I think there was good reason to conclude there was a good supply of water at that depth in that distant age, percolating through the lower strata of rock, running from the fertile plains and rounding the edge of the rock on which the Pyramid stood, making its course toward the river Nile, and at the rising of the Nile a check to its course would be the consequence, and flooding the lower chamber would be the next result. Hence a stoppage of the work in that direction while in progress, while it enhanced the supply, which there is little doubt would be a periodical welcome, giving an opportune time for thorough washing off. Unless the reader has watched the operation of rubbing and polishing stone, no idea can be formed of the wet and sloppy performance, though in these days, in this age of chemistry, the surface may be softened and a large proportion of labor saved.

Apart from all other considerations, it will be seen that an early as well as ready supply of water would be in earnest request from the very earliest stage. Air and water would be the two principal elements first calculated on for the due performance of such gigantic proportions.

In this practical illustration of the Great Pyramid and its several parts, I trust I am not taking undue credit for misconceived ideas, or egotistical enough to suppose I am advancing any new phase of the Great Pyramid construction; nor in the remotest degree ignoring the great scientific existing realities. Far be from me any such intentions, but to show the dignified prescience while framing such gigantic proportions mathematically, geometrically and arithmetically, that a design so profound in wisdom and learning gave out the conclusion that those occupied or so engaged at the head of the works were actuated by divine inspiration. So, therefore, all is delineated with such precision that even the constructive wants, facilities, with comforts of the craftsmen were not lost sight of, considering all of which, my hypothesis only adds to the innumerable proofs and undeniable facts of the practical construction of its vast designs now exposed to the view of the beholder, with those yet to be explored.

When those portions are removed that we have indicated according to the designs of the original architect, who, while constructing those supplementary portions, well knew they would not be disturbed though many long ages of time, and not then until all the remarkable fixed purposes of number, weight and measure were fully tested and made known to the world, so that all may understand and acknowledge that none other than the Great Architect of the universe did conceive and cause to be built into fact such cosmic proportions. No one can assert these sacred truths and known designs on the part of the architect were accidental. Every part throughout the whole structure of which is known or unknown, has a definite place and proportion, with a fixed purpose in the general plan. I am dealing alone with practical construction, as far as my idea of practical construction in connection with this building is concerned.

Leaving the grand mathematical researches to more exalted and able minds, some of whom figure conspicuously in the United States of America, *THE INTERNATIONAL STANDARD* being a bi-monthly journal having for its contributors some of the most able

mathematicians known to science, I think enough has now been said in a practical point of view to enable those of us in any degree acquainted with the internal construction of the Great Pyramid to follow me into the chambers yet to be explored, and which I hope in due course will be opened and the hidden mysteries of nature and science brought to light. But however much we may feel we know in this, or, indeed, in any direction, it is as a myth compared to the will and intention of the designer of this "miniature world" in point of geodesic knowledge, and "stone Bible" in point of chronological order, and the ordained dispensation of our Heavenly Father, who has set and determined his purposes for all historical events, and when the appointed time arrives these unexplored chambers will be opened, and not before, by all the machinations it is in the power of mankind to put in force.

I hope on a future occasion to give the practical operative method of surveying and exploring those mysterious mounds at "Tara," in the county of Meath, North of Ireland, when Free-masonry will be the sequence to the programme.

THOMAS HOLLAND.

March 9, 1885.

LETTERS.

LETTER FROM C. PIAZZI SMYTH.

15 ROYAL TERRACE, EDINBURGH, March 19, 1885.

Here is a most unexceptionable piece of Pyramid encouragement. I wrote to Egypt to inquire about the origin and meaning of the time signalling at Alexandria for the meridian of the Great Pyramid, and I send you a copy of the answer just received from Mr. James Hewat, by profession an accountant there, but better known here as a son of the late Mr. John Hewat, a merchant who was the effective originator, twenty-five years ago, of the Edinburgh observatory's time gun signals, as an addition to its time-ball signal of the true time; and ever since then we have kept up these two signals every day, check and check upon each other, through independent electric loops from the observatory clock, corrected daily by star observations the previous night. Now, just read his answer with all its well condensed and useful information. Is not the Great Pyramid asserting itself in these latter days? And at the crossing place of all the great highways over the earth, the time is now announced to the nations from the meridian of the oldest architectural monument of all mankind, the greatest wonder of the seven wonders of the world in the days of the Greeks, and the only one of them still existing! But how the advantage of that torch for all men, through all time, will be lost—if some of our over-learned few proceed to make up a system of weights and measures for the Anglo-Saxon peoples of the present and *future* times when they are to govern the whole earth out of their own abstract thoughts only, acting in subservience to the new fashion in natural philosophy schools of talking of kinetics and energy—as a sort of natural power to bow down to—and yet bringing out the Pyramid units and standards of measure, though without acknowledgement. But as the Great Pyramid, we acknowledge God and his Christ, and we must not be ashamed of that confession in our whole walk and conversation in life, and least of all when we are dealing with time, space, matter, the subjects of His creation. In the last letter from my Indian correspondent he remarked, on hearing of the fall of Khartoum, "now you will see events (Prophecies of Daniel) march quickly." And how quickly, too, they have marched, with Russia already at the gates of India.

Yours very truly,

C. PIAZZI SMYTH.

TIME SIGNALLING IN EGYPT FOR THE MERIDIAN OF THE GREAT PYRAMID.

ALEXANDRIA, EGYPT, 10th March, 1885.

My Dear Sir: I was glad to receive your letter of 14th ultimo., and have pleasure in giving you the following further information which I have gathered in reference to the lately adopted keeping of Pyramid time in Egypt. It appears that the originator of the idea is Lieutenant-Colonel Ardagh, C. B. R. E., who is at present stationed in Cairo, and has been in this country since 1882, when the war began. I must here state for your information that the British military authorities have here and in Cairo a time-ball and a time-gun in each city, while the Egyptian government has the same. What Colonel Ardagh wanted was uniformity of time for all. His reasons for the adoption of Pyramid time in preference to the Khedeviah Observatory at Abbassiah are, that the Great Pyramid has been employed by the French scientific expedition last century (or rather the beginning of this)

as a meridian and also employed by R. E. Mahmood, Pacha, in his map of Egypt, and also because the Great Pyramid is the most enduring landmark in Egypt.

The actual observations of noon are taken at the Abbassiah Observatory by means of a transit instrument, and the meridian distance between the observatory and the Great Pyramid is calculated by observation and subtracted from the observatory time before the latter is signaled to Koom-el-Denas. At Koom-el-Nadura (Alexandria) the gun is fired and the time-ball hoisted 4' 58" before local time, the meridian distance between the time-ball at Koom-el-Nadura and the Great Pyramid being 4' 58". This has been adopted for the Egyptian railway and the telegraphic services. Colonel Ardagh further says the longitudes dependent on the transit of Venus stations are as follows:

	Hour	Min.	Sec.	
Signal Station, Alexandria.....	1	59	38	96
Great Pyramid.....	2	4	31	6
Abbassiah Observatory.....	2	5	8	5

A telegraphic signal of mean noon meridian of Great Pyramid is sent to all stations from Abbassiah Observatory, which is 37" fast of Great Pyramid time.

I am indebted to Captain Bloomfield, R. N., controller of this port, for the foregoing information, which I hope you will find interesting and accurate. With you I quite agree that this country has been roughly handled by those who professed to protect it,

And I am yours, etc.,

JAMES HEWAT.

To Professor C. Piazza Smyth, F. R. S. E., etc., etc., Edinburgh.

LETTER FROM J. P. WEEITHIE.

MILLFIELD, April 5, 1885.

The STANDARD of March, 1885, came to hand yesterday and its contents pretty well examined. You will please allow me to express my gratitude for the able and well written notice of the 'Coming Age.' I hope and trust that it will have an influence with your intelligent readers.

You will allow me to express myself freely on matters relative to the impending future. C. A. L. Totten's "Preface to the Study of Anglo-Saxon History," your article, "Unveiling of Isis" and the letters of C. Piazza Smyth and Theodore Gribi have been very interesting—absorbing. I have read Hines, Wilson and others, relative to Anglo-Israel, and I do not hesitate to affirm that, except the advent of the Messiah, no subject can claim equal interest; and on that topic you will allow us to write, not that I can present anything new to you, but simply to give vent to a few thoughts that are pressing me for liberty of expression.

You are aware, perhaps, that I am writing a second work, "The Eastern Question in its Various National Phases," but are not informed as to its extent and peculiar features. It will be a book considerably larger than the "Coming Age," requiring a greater mental tax, since the plan of the work is somewhat new. I will now state, in a few brief words, what I have written, and what still remains.

(1). I have written the Egyptian phase, tracing its land and its population through all the periods of existence, to the future reign, pointing out God's mission with that people, past, present and future; and describing their position in the future conflict and reign.

(2). The British phase was then sketched. In doing this I went back on the track of that people into Northwestern Europe; then into Central Asia; and finally into South-western Asia, and showed their identity with the ten-tribed Israel; showed their past, present and future mission in re-establishing the Hebrew nation as king of the South.

(3). The Russian phase was then examined. The origin and history of the Russian are fully given; his work and his adaptation to his work; his European home minutely examined, and the divine intention in all his movements; I traced his efforts to take Constantinople first from the Greeks, then from the Turks; and stated the causes of his repeated failures; and traced him in his present and future mission.

(4). I then examined the Ottoman phase of the Eastern question. That family was traced to its original seat in Central Asia, and their gradual progress south and westward, till they were established at Constantinople; showed their special mission and the reasons why the holy places have been in their power for so many centuries; showed their present and future mission.

(5). I then traced the Hebrew phase of the Eastern question. That family I traced from their origin through twelve epochs to their return, and reign under Messiah. I was particular to trace God's dealings and purpose relative to that people. This phase involves matters of great national interest; I demonstrate that family to be the hub of Messiah's great nation wheel. The writing of the Hebrew phase has cost me great labor, both in reading and thought.

(6). I am now writing the last, or American phase. I have now written about one-half of this phase. I have traced this American family from Columbus to the administration of Washington. Though I have all of our great libraries open to me, such as our state and congressional libraries, still much that I want cannot be found, such as its divine prophetic history. I am now writing on the Great Seal. I got some information from the Congressional library, and have written for more; also to Toronto, Ont. I search our State library. I have this to finish, also the preface and conclusion.

This book will involve all the great national issues of the day, and, therefore, cannot fail to command attention. My subjects are so vast, and the issues so overwhelming, that ordinary topics fail to interest me.

One great object of the book is to define the *true* Eastern Question; or God's purpose in the Eastern movements now in progress. It is quite evident that Jehovah and the earthly monarchs have not the same views of the world's government. The monarchs of the East have their own selfish ends to carry out, while God is working for his own glory, and that of his Son, Messiah. Which will finally be victorious, the Bible most emphatically declares, your unveiling of Isis is a grand thought; but I have to treat the growth, assimilation and the development of the new man of America, the Americanized Anglo-Saxon, in another way. I think that you will be satisfied with my positions. If I had Mr. Totten's idea of the seal it would help me, otherwise, I will get the facts and draw my own conclusions. If you can help in any way I shall be very thankful. Write me.

Yours,

J. P. WEETHEE.

LETTER FROM JAMES SIMPSON.

15 PALMERSTON ROAD, EDINBURGH, March 7, 1885.

I am deeply indebted to you and to the International Institute for sending me, from time to time, copies of the valuable STANDARD of your society and other printed and written communications bearing on metrology and kindred subjects. No student of Great Pyramid science in this country can afford to be ignorant of the important developments which it is receiving at the hands of our American cousins, especially as borne witness to in the pages of your bi-monthly STANDARD, and that I may not lose the instruction to be had from its varied contents, I must ask you to be so good as enter me as a subscriber thereto.

It may be of some interest to you to know that a "Scottish Geographical Society" has been this winter inaugurated in Edinburgh, and I have much pleasure in sending you

herewith a copy of their first report and the opening number of 'The Scottish Geographical Magazine.'

The enclosed Pyramid notes relate to some matters which have already been discussed in your pages. Wishing you all prosperity, I remain,

Yours sincerely,
JAS. SIMPSON.

LETTER FROM JOSEPH BAXENDELL.

April 24, 1885.

The prophetic indications of the Great Pyramid have been abundantly borne out by the events of the last few years, and there can now be no doubt that the first arrival at the south end of the grand gallery occurred in the spring of 1880, as I pointed out in the *Banner of Israel*, when the great and unexpected change in the feelings and opinions of the people of this country took place, which led to the placing in power of a government whose blundering, incapacity and utter want of moral courage have well nigh ruined the country and led to disputes and complications with foreign countries which threaten to result in a general European and Asiatic war. If such a war should occur, it may indeed be regarded as "the great earthquake woe," and "the time of trouble such as there never was since there was a nation," referred to in the prophecies.

Yours very truly,
JOS. BAXENDELL.

LETTER FROM J. L. DAMPIER.

LONDON, ONT., April 8, 1885.

The "Unveiling of Isis" is as deeply interesting and absorbing in its subject, especially as regards Manasseh, as Dr. Sciss' work, "The Gospel in the Stars," which carries us back to the "In the Beginning," a beginning for us mortals beyond which we cannot penetrate. All the science of geology and the learning unto which man has exalted himself, ignoring the words "except ye become as little children," have not been able to shake my belief as regards that first chapter of Genesis. Proctor says no sane man could read "Anglo-Israel." I wonder where he would assign those holding the above opinion. Darwin, with his "Origin of Species," and Egypt, with her "Races of Men," the "ape" and "Ibis," are specimens of the art of deception which can be traced to the master of all deceivableness, culminating especially in these latter days. This is certainly an age of digging up and of bringing to the light things that have been hidden. We all begin life with wondrous story books of giants, dwarfs, genii and fairies, the Seven Champions of Christendom, St. Michael and St. George encountering the Dragon or Satan, all ranking amongst the myths and having then no further bearing or meaning than the evanescent pleasures of an hour; but now in St. Michael and St. George the "Serpent and the Cross" are plain. A symbol is a silent myth. What a solemn silence the Great Pyramid has kept from 2170, B. C., until now. The Gospel in the Stars before the flood, the written word for this age, and the Great Pyramid a symbol of the whole. As we ascend the ladder of life we enter upon "Classical Mythology" and "Northern Mythology." The following was and is the opinion of the learned men of this age: "The heathen mythology not only was not true but was not even supported as true; it not only deserved no faith but it demanded none." After reading "The Gospel in the Stars" and "The Unveiling of Isis," this opinion must be very much softened down and the myths of our younger days have a far different meaning and appearance in this Saturday night of our

lives. Just as after a cloudy, dark day, at setting, the clouds lift and the sun flows in a stream of light over rock, mountain and valley, so in these, our latter days, a flood of light is being poured in upon us by divinely inspired men, as much so as those before or after the flood; for such words as "Anglo-Israel" and the Pyramid would never have entered into the heart of man to have conceived, sought out or hunted after unless divinely led; and further, being so intimately mixed up and interwoven in this written word that in many parts that word cannot be properly understood without a knowledge of these two subjects. The myths in "The Unveiling of Isis" fit as beautifully in their place and are equally truthfully applicable as the twelve signs of the Zodiac, and their accompanying decans portray the "Serpent and the Cross," the gospel in the "garnished" heavens, as Job calls them—those heavens in which appeared the "star" for the Magi. May we likewise see His star, fall down and worship. With regard to America, there is no doubt in my mind that it has been kept especially for Manasseh. We are "fifth monarchy" men, though not fanatics, as when they declared themselves in the time of Charles I. and Cromwell, they had hold of the true thread out of the Labyrinth, but blindness had happened unto them and they were before their time. But soon the "Stone Kingdom," Israel ten-tribed, shall appear, grinding the image to dust, and Ephraim and Manasseh shall be the chief amidst the thousands of Israel—our Saviour reigning in Jerusalem, the two sticks united, and His chosen people the *Kingdom of God on earth*, when a great and overpowering blaze of gospel light will be spread abroad. The gospel is proclaimed as a witness in every nation now; this is one of the signs given to us by our Saviour. Let us watch and pray that we be not caught asleep without any oil. To those who believe and delight in recognizing the hand of God in history, I have no hesitation in saying that the men who have brought up and searched out the questions of "Anglo-Israel," the "Pyramid," and "Unveiling of Isis," must have been directed and led thereto by a power working in them unknown to themselves, not a deceivableness of wickedness by which, in the latter days, many will be made to believe a lie—for the above questions have led many a one to search the Scriptures, to whom, skeptical before, they were a closed book. I say a power unknown to themselves, not like the known presence seen and spoken with by the patriarchs of old, but an inward feeling had been engendered by constant, earnest, daily prayer for guidance—a perfect wrestle with the angel. "I will not let Thee go, unless Thou bless me." For God never changes; He is the same now as then. One of the great sins of this age is the ignoring of God. He says he will be enquired of by the House of Israel. Are not the above questions deeply enquiring ones? Have they ever turned anyone from the path of duty? No, surely; but, on the contrary, have been a light unto their paths and a guide unto their feet; so that the very myths are crying out against those who will not hear His word; against those who made use of these very myths and zodiacal signs, hoping to overturn the Christianity of the "In the Beginning;" but they dared not go back to that "In the Beginning" and prove who put those signs in the garnished heavens, for if they had the ground would have been swept from under their feet. In this age the very stones are speaking, the sands of the desert are upheaving and the myths of Greece and Rome are loudly proclaiming that which has been hidden for ages in their midst, so that there is nothing hidden which shall not be disclosed and proclaimed from the tops of the hills and mountains and from the house tops. It is only now we are beginning to understand Job, that "He would show thee the secrets of wisdom that they are double to that which is," and that "with the ancient is wisdom," viz.: primeval man. Our boasted civilization and society are but in their infancy; pure Christianity can only bring them to their prime, and then only at the time of the millennium, when Christ reigns and Ephraim and Manasseh, with reclaimed Judah and Levi, are the kingdom—"Thy Kingdom Come."

Yours truly,

J. L. DAMPIER.

LETTER FROM J. R. SKINNER.

110 BROADWAY, CINCINNATI, April 28, 1885.

You know that I think your *Isis* a strange production, and I confess I do not know how to pronounce upon it. I do believe in the great prophecies of the Bible, and feel more and more convinced that we, in our day, are in the midst of some of their greatest fulfillments—palpably so. As, for instance, as to the fall of the papacy and the waning of the Mostem power, as also the preparing the way for the kings of the East. Now much of this kind of prophecy was certainly astrological, for it was made to answer to times; but how I do not know. Very much of your work does seem to fit as to the working of our nation's work in this grand drama, viz.: ours of the New World—and does connect the germs of rise in the grand current of the stream, viz.: Huss and Luther—then Isabella, etc., etc. Your general mode is that which the Orientals observed. In looking into spiritual causes they recognized pertinent facts on earth as guides and land marks of the spiritual influences. I think if a man be an attentive observer of history and the workings of the nations, with a sincere view to arrive at conviction, he will after a time be amazed at the new kind of life and spiritual world into which he will find introduction; and this, I think is your experience. To me your articles have all the charm of ordinary romance intensified by the above consideration.

I have made very remarkable discoveries in what I may call the Grecian branch of the Hebrew Kabbalah, and it seems to explain to me what has been a puzzle, as to the unfolding or development of the Christian dispensation, which is full of Kabbalah from among the Jews, who hold it so. The fact is that this Kabbalah of which we have discovered the secret keys, was the "last" or "final" or "great" mystery of each nation. The origin was not among the Jews or Hebrews proper, but with the long anterior Semitic people, who landed from somewhere at the head of the Persian Gulf and at the head of the Red Sea. I think the first people were the same with the old Americans.

J. R. SKINNER.

LETTER FROM F. R. WINTER.

DEMERARY, March 9, 1885.

I have taken much interest in your paper on the Unveiling of Isis, and see now that it does approximate on Anglo-Israel belief, and trust that you will soon see that your interest in America is inherited through Mannasseh, and I have no doubt that Mr. Hine's visit will lead to a clearer understanding on this point, for he is undoubtedly well posted in the Scriptural arguments on the point, and he may possibly bring Mr. Wood's attention back to this part of the great subject to which he and you, among others, devote so much valuable time. And the Scriptural guidance which can be adduced will strongly back up the mathematical proofs which are so commonly brought forward.

I note your criticism of Mr. Feilden's work. I have again tried my hand at a correlation of his views with the division of time by Esdras, as I believe it to mean, and the Bible version of the creation so as to coincide with astronomy of the Pyramid measures, and I send you the result. I take my own chronology from the date of the birth of Adam and Isaac and if it be necessary to satisfy a much longer period than a jubilee of years, that longer period, may be deduced from the subterranean measures. But I think the point is overstrained, for after all what we have to deal with is contained in the Bible history of our first parent, and it may be doubted if any further knowledge of pre-Adamite man is necessary for us beyond what we read in Genesis, and if it were, will not the 10,000 from the creation of light, or its manifestation to our earth, cover the pre-Adamite ages, anent which no special revelation has been given to us. The above period is com-

prehended in and seems necessary to complete the revolution, or semi-revolution, of the known precession of the equinoxes as marked by the Pleiades year, 2170 B. C.

Hoping this may find you in the enjoyment of good health and full of energy to continue your work, which I firmly believe has God's blessing upon it,

Yours in faith,

F. R. WINTER.

'The Word, the World and the Branch'—J. Leyland Feildens' Periods of Creation.
12 cycles of 600 years = 1 day.

	Years.	Days.	Cycles.	Years Anno Domini.
World created void and dark.....	3,600	3½	6	.....
Light created or diffused.....	3,600	1½	6	.....
.....	.....	1	12	7,200 A. L.
Light diffused.....	21,600	3	36	21,600
Light—earth included in the solar system—first procession of the equinoxes.....	3,600	1½	6	3,600
Fourth day from light.....	28,800	4½	54	32,400
Fifth day completed.....	3,600	.....	.....	.....
Sixth day completed.....	7,200	1½	18	10,800
Adam's era—from light.....	39,600	6	72	43,200 A. L.
Adam to Isaac—Pleiades year.....	2,116	.....	.....	2,170 B. C.
Isaac to A. D.	2,170	.....	.....	.....
A. D. to end of 6 cycles of 1,040 years.....	1,954	.....	.....	6,240
.....	45,840	.....	.....	.....
Millennial period.....	1,000	1	12	7,200
Period of darkness.	3,600	7	84	50,400
.....	50,440	.....	.....	.....
By the Pyramid chronology from Adam to A. D. is 4,286.				
By J. L. F.'s chronology 4,004 + 21 = 4,025.				
Difference				261.

*10,800 from solar system in calendar year, thus:

7,200

— 18,000 is equal to — 17,741 solar years. Difference 259.

LETTER FROM J. N. WING.

NEW YORK, April 7, 1885.

I confess that I am not equal to the comprehension of the astrological phase of your articles, yet it is all so fascinating that I wish I might know more of the vast subject. In this last I was pleased to read about the 'May Flower,' and the first meeting—the Suffolk Resolves. You had told me of your researches in that direction, so much of your article was a pleasant remembrance. You must know that I, from my infancy, as it were, have held to the idea of *individual responsibility*—that is, that we are not beings born to a certain fixed existence, but rather, that we can, by individual effort—from the innate consciousness of which we may be possessed from *natural* causes, inherited or otherwise—expand or contract irrespective of any supernatural agency. I find it hard to believe that my horoscope has been cast, and that I am guided

or led by the "star of my birth." It may be all so. I cannot say no. I trust that you will say with Tennyson :

There lives more faith in honest doubt, believe me,
Than in half the creeds.

I have not read Totten's article on "Anglo-Saxon History," but shall soon. That subject interests me greatly, and I intend to study it more. Not long ago I addressed the members of a little society, of which I am a member, on the subject of the "Lost Tribes," and I must say that I was surprised that only one person present had ever heard the subject treated as Mr. Hine deals with it.

We intend to stand by our guns, and keep the STANDARD floating.

Yours truly,

J. N. WING.

LETTER FROM C. PIAZZI SMYTH.

15 Royal Terrace, EDINBURGH, April 2, 1885.

Your March number of the STANDARD duly arrived, and a very good number it is. Good, also, the illustration, viz: the landscape birth-place of American United States liberty. Surely with that eventful scene before them, the sons of the heroes who figured there are not going to bow their necks to the yoke of French instead of their own weights and measures. Lieutenant Totten, in a recent letter, makes a magnificent remark thereon. He is grand and calm and Scriptural, and says he does not believe there is any danger of the French Metric system being made compulsory in the United States of America; and if there is a permissive regulation about it, it is merely akin to that other order given a long while ago, "let the wheat and the tares grow together until the harvest, and then"—. That harvest, he seems to think, may be much closer than many men expect. So, too, does my Indian friend, Mr. R. Courtenay, now to be addressed as Assistant Judge, Tanna, Bombay, a letter from whom arrived simultaneously with the other, and I send it on to you herewith, for I find it interesting and instructive from beginning to end. It is in a peculiarly original line, too, which will interfere with no one, but may light the way for many, and I remain

Yours very truly,

C. PIAZZI SMYTH.

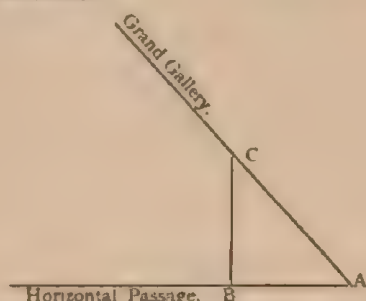
IMPORTANT LETTER FROM R. COURTENAY.

TANNA, BOMBAY PRESIDENCY, April 2, 1885.

TO PROFESSOR C. PIAZZI SMYTH:

I have been obliged, in the interests of truth, to append a short postscript to my pamphlet. It is still in the press, so I shall not be able, I think, to send off thirty copies to you until next week. Considering the storm of persecution from which you have not even yet emerged, I can quite understand your feelings in regard to these new departures in Pyramid interpretation; but you have fulfilled my only desires, which are that they should not sink like water into sand, but should form stepping stones to other and greater discoveries. Many thanks for the pamphlet, and also for the January number of the INTERNATIONAL STANDARD. I should like to become a member of the Institute. I do not think they ought to put off much longer their expedition to the Pyramid. Egypt will probably witness many desperate battles before the end comes. They are allowing the present short opportunity to pass by.

I had no idea when I wrote my pamphlet in what a sea of controversy I would find myself. Doubt still rests on the angle of inclination of the gallery, but in any case the area of controversy has been much reduced by the Pyramid. If the angle be $26^{\circ} 17' 4''$, or less, then our Lord was born in the spring B. C. 1, and crucified in A. D. 33. If it lie between $26^{\circ} 17' 30''$ and $26^{\circ} 18' 0''$, then A. D. 34 must be the year of the crucifixion. It is strange how exactly this represents the present state of the controversy looked at merely from the Biblical and historical points of view. Many now contend, in opposition to the numerous and powerful arguments of Sir Isaac Newton, that B. C. 458, and not 457, was the seventh year of Artaxerxes, 490 years from 458 bring us to A. D. 33. Then looking at the day of the week and lunar month, fourteenth Nisan in 33 A. D. was a Friday, and fifteenth Nisan in A. D. 34 was also a Friday. The date of Waterloo will remain as a fixed point, and the change of a year in the date of the nativity would push forward the taking of Jerusalem by Omar only sixteen or seventeen days. I have been endeavoring lately to ascertain the exact angle of inclination of the gallery by calculating its effect on the numbers in the horizontal passage and the queen's chamber. I make use of a method which you unconsciously adopted at one place in 'Life and Work,' viz: to consider the grand gallery the great chronological scale of this dispensation and to interpret numbers in the horizontal passage and queen's chamber by finding the corresponding lengths along the line of the gallery.



For example, instead of A B read A C; in other words, divide A B by $\cos. 26^{\circ} 18' 0''$.

I send you by this mail a little pamphlet, "The Flight into the Wilderness," which I brought out some years before my eyes had begun to be opened to the connection between the Pyramid and the Bible. You will find two dates:

$$\begin{array}{r} 260 \text{ A. D.} \\ 1260 \\ \hline 1520 \text{ A. D.} \end{array}$$

Now, measuring along the grand gallery you found that the passage finally left it at 262.6 British inches from the north wall:

$$\begin{array}{r} 262.6 \\ 1260 \\ \hline \end{array}$$

$1522.6 =$ very length (given in 'Life and Work') of passage. But this is a rough agreement. Such will probably not satisfy you. I, therefore, proceed to apply my method: Considering the roughness of the floor and its beginning, and that the passage is not quite horizontal, a little more latitude should be allowed to me than in the grand gallery. At the distance 1303.3 British inches (equals 1302 Pyramid inches) from the north wall there is a sudden descent. 1303 A. D. is a most unpromising date. Historians tell us of no remarkable event in that year. But now allow me to call it 1301.82 and find the corresponding length along the grand gallery. $1301.82 \div \cos. 26^{\circ} 18' 0'' = 1452.13 =$ (counting from April 20, A. D. 1, and allowing for error caused by Julian

reckoning) May 29, 1453=date of taking of Constantinople by the Turks, leading to great diffusion of the knowledge of Greek over Europe, hence Erasmus' Greek Testament and hence the reformation:

Now length of horizontal passage to jamb in queen's chamber=1522.6 British inches.

1.5

1521.1 Pyramid in.

Allow me to call this 1520.8. $1520.8 \div \cos. 26^{\circ} 18' 0'' = 1696.4$ =counting from April 20, A. D. 1, September 20, 1697,=date of peace of Ryswick=(vide 'Grattan Guinness' appendix page 655) 'End of Sanguinary Conflicts and Full Establishment of Civil and Religious Liberty in England.' With the peace of Ryswick ended religious wars in Europe. Not merely this, but Revelation xi, 14 connected this date with the termination of the Turkish woe. Now, on September 11, 1697, at Tenta (in the same "hour," *i. e.* "fort. night"), Prince Eugene annihilated the Turkish army. Since then the Turks have fought for bare existence. According to Revelation ix, 15, the woe lasted 1 year+1 month+1 day+1 hour=(365+30+1) years+16 days.

Battle of Tenta, 1697 September 11

396	14
1301	August 28

Now, according to Van Hammer, the great historian of the Turks, their first Sultan, Othman, made his first descent on the Byzantine empire—in fact the Turks commenced to be a predatory horde—in midsummer, 1301 A. D. —. Obviously in making such an investigation it is most desirable to have before you as many sets as possible of independent measures. In order to obtain Petrie's measures I ordered out his book from London, but I heard, after waiting several months, that it was out of print. If you think them worthy to be used as measures, I would be greatly obliged if you would copy out for me on a postal card his values of the (1) angle of inclination of the gallery, (2) the length of the horizontal passage, and (3) the length, (4) breadth, (5) height, and (6) and (7) diagonal¹⁵ of floor of the queen's chamber. I should like to hoist the engineer with his own petard!

I am

Yours very sincerely,

R. COURTENAY.

LETTER TO PROF. C. PIAZZI SMYTH FROM JAMES M. DURKEE.

PITTSFIELD, MASS., March 21, 1885.

Dear Sir: You will pardon me, a stranger, in the liberty I take of addressing you. I am reading and *thinking* your book, 'Our Inheritance in the Great Pyramid.' It has awakened in my mind a deep interest, and thoughts come like great billows from the ocean. I want to thank you for that book, although I am not an educated man, only a *printer*—once a poor boy—but for twenty-five years of *business life* the *Word of God* has been the *light of my pathway*, and I most firmly believe that "the invisible things of Him from the creation of the world are clearly seen, being undersood by the things that are made."

I desire in this communication to call your particular attention to the remarks you make in regard to the "*50th course* and the total height of that structure," or 1,690 inches, and the level of the floor of the king's chamber." Does this have any connection with the date of the deluge, which is placed at 1,657. Are not the inches you give the true *line mark* of that wonderful event only 33 inches or years difference? Will you please notice this remarkable instance? And, second, *the first course* of the king's chamber is a "*tenth part*, nearly, taken off the height of the lower course by the manner of the introduction

of the floor!" does it not completely solve the mystery of the 107 *Ten patriarchs*! Noah, the 10th before, yet reckoned the 1st after the flood! Does not this explain "the significant 5 X 5, and 10 X 10 100 stones, and can we not say whose "image and super-

The granite has particularly attracted my attention! the *symbolism* of which is generally understood when connected with 7. Finally, I believe this Great Pyramid to be the symbolical witness of God "declaring the end from the beginning."

May I hope to hear from you in relation to the two points herein suggested, and may our kind heavenly Father, God of all, give you more wisdom and length of years to reveal his power.

Yours very truly,

JAMES M. DURKEE.

LETTER FROM S. BESWICK.

STRATHRAY, ONT., April 6, 1885.

Sir: Magazine came to hand rather late. This number has some interesting papers in it. The frontispiece of the birth-place of American Liberty is a valuable relic to be prized, and is an appropriate illustration for your article on "Isis," which (from its literary features) to my mind is one of the best, if not the best, paper published on that theme.

In regard to Mr. Wood's article on the E. N. E. trench and the obliquity of the ecliptic, of course, I like the article, and its main drift accords with my own theory, but Mr. Wood's theory falls far short of the actual use and purpose of the E. N. E. trench. In an article of mine on pages 254-256 I have indicated a few of the features, as hinted at by Petrie himself, of the purpose and meaning of the trench. But the E. N. E. trench Petrie has missed its meaning altogether. Mr. Wood's theory that this trench was used as a "time indicator" of the variable obliquity of the ecliptic is a little exaggerated and inadmissible; because that theory would imply the long, continuous *usage* of the trench for centuries, and does not accord with the *blocking up* of the Pyramid passages and the entrances immediately the Pyramid was built. The three great trenches, no doubt, have an astronomical bearing on the work and design of the Pyramid. But that astronomical bearing and use would cease with the erection of the Pyramid, except in some subordinate sense, as a relic of what it had been. This objection would only apply to the case as a permanent institution, and as a sort of observatory. There can be no doubt that the basalt pavement, with the three trenches, was used as an observatory of a very high order of perfection during the work of constructing the Pyramid. But Mr. Wood's article is an admirable piece of close reasoning, and very scrupulously confined within the limits of known fact and established astronomical data.

I am glad to see the basalt pavement coming into prominence, because I believe that you will find that it is the true *level of the Pyramid's pavement*, as I have before intimated. These trenches furnish a demonstration that the pavement's level was 41.2529 inches. But I will take this matter up at some future time.

I read Professor Smith's letter with interest. I agree with him that Professor Rogers would do us an immense service if he would take a rod of black marble, or *flat ruler*, and put his microscopic scale upon it, as black marble is the least expansible from heat.

The extract from the consul's letter to the Secretary of State is very explicit and definite, and the restrictions are reasonable and even desirable, provided the Khedive will look well after the old walls, temples, etc., and stop the *native* from *despoiling* as well as the *foreigner*.

S. BESWICK.

LETTER FROM JAS. SIMPSON.

EDINBURGH, December 12, 1884.

My Dear Sir:—I am sorry that in writing to you on Wednesday I was so forgetful as to omit reference to a small matter that has come under my notice, and may (I do not know) have some Great Pyramid significance.

The silver coin which our bank receives from the mint is put up and sealed in £100 bags of half-crowns, florins, shillings, etc., as the case may be, and each bag has a mint label bearing the weight in ounces and (as I conceive) hundredths of ounces. I enclose one of these labels and add a note of weights taken down from several others, from which it appears that the mean of all is (if the fractions are hundredths) 365.293 ounces Troy, as thus:

Florins,	365.16
Florins,	365.10
Florins,	365.15
Half Crowns,	365.90
Half Crowns,	365.35
Half Crowns,	365.10
6	176
	365.293

I am unable meanwhile to make a larger selection, but such as it is, it comes strangely near that fundamental Great Pyramid number, 365.24, and one cannot help thinking the coincidence is as little accidental as in the remarkable cases of the weights of the United States of America single coins. Judging even from the entries made above the weight, 365.90 would seem to be quite exceptionally high, and if it were omitted there would come out a mean of 365.172 only. It might therefore quite well be that the general mean would lie very close to 365.242.

Yours very sincerely,

JAS. SIMPSON.

PROFESSOR C. PIAZZI SMYTH,
15 Royal Terrace, Edinburgh.

THE GREAT PYRAMID.

Thou Word of God materialized in stone,
Sculptured programme of the Heavenly drama;
When wilt thou manifest thy purpose here,
With zephyr-voice proclaim thy mission to the world?

G. VOGLESANG.

TRANSACTIONS OF THE OHIO AUXILIARY SOCIETY OF THE INTERNATIONAL INSTITUTE.

MARCH 25, 1885.

Hugo Friedrichs, Gotha, Germany, and W. C. Jones, of Cleveland, were elected members.

A piece from the coffer of the king's chamber of the Great Pyramid was exhibited. It is of red granite, highly polished, and is similar in appearance to specimens from the Temple of the Sun at Heliopolis, Pompey's Pillar and Cleopatra's needle.

Letters were read from Rev. H. G. Wood, upon the Egyptian cubit preserved in the Turin Museum; from Professor F. Hess, on the late eclipse; from Rev. E. P. Ingersoll, on the identity of Israel with the Anglo-Saxons; from Professor W. A. Rogers, on the standard yard bar, which he is making for the society; from Professor A. Abbott, criticizing Mr. Beswick's paper on "Metrology of Coins or Values." A paper by Mr. James Simpson of Edinburgh, Scotland, upon the "Pyramid and British Inches," was read.

A paper sent by Commander S. R. Franklin, of the National Observatory at Washington, was read. It contained communications concerning the proposed change in time for beginning the astronomical day. The conclusion of the department is that notwithstanding the fact that England has made the change beginning the astronomical day at midnight, corresponding to the civil date, the United States Naval Observatory will make no change until the ephemerides are constructed in accordance with the recommendation of the recent International Meridian Conference.

A pamphlet sent by Professor C. Piazzi Smyth, and written by Mr. R. Courtenay, of the Bombay civil service, was discussed. The work is entitled "The Two Witnesses—The Bible and the Great Pyramid."

A notice was given of a very interesting work which has lately appeared, confirming the theory of the late Abbé Moigno, a distinguished member of our Institute. It is entitled "The Store City of Pithon and the Route of the Exodus," by Edward Neville, of the Egyptian Exploring Fund. An interesting paper from H. W. Oswald, entitled "Ho, for Palestine," was also received and acknowledged.

APRIL 8, 1885.

In the absence of the president, Dr. Redfield occupied the chair. The members elected were George S. Gatchell, Buffalo, New York; G. A. Kraft, Fredericktown, Ohio; Dr. Joseph Mason, Jackson, Tennessee; John H. Weldon, Kilmallock, Ireland, and James Simpson, Edinburgh, Scotland, life member.

Professor C. Piazzi Smyth wrote with reference to the adoption of Great Pyramid time by the Egyptian government. Letters were also received from Mr. James Simpson on "Coinage," from Professor A. Abbott and Mr. Eli Baldwin on "Ancient Coinage," from Mr. J. L. Dampier on "The Fulfillment of Prophecy," and from Mr. F. A. R. Winter on "Periods of Creation."

After discussion upon the Great Pyramid as a prime meridian for the world, the meeting adjourned for two weeks.

APRIL 22, 1885.

At the meeting Mr. Edward Hine was elected a life member. Letters were read from Professor C. Piazzi Smyth, James M. Durkee, S. E. Massey, J. L. Dampier, J. N. Wing, Alfred E. Watkins, William E. Brown, Henry Kellogg, Dr. E. M. Epstein, J. P. Weethce

N. F. Safford, Samuel Beswick, Professor I. N. Vail, Rev. J. Upjohn, W. K. McAllister, Jacob M. Clark, J. M. Goodwin.

Arrangements were made for the lecture of Mr. Edward Hine of London, the English apostle of the theory of the Anglo-Saxon race being identical with the lost ten tribes of Israel.

Mrs. A. M. Searles read a translation from the work of M. Lecomte, an engineer engaged by M. de Lesseps in the construction of the Suez canal, entitled "Campagne of Moses," throwing a new light upon the route of the Exodus and the actual point where it crossed the Red sea.

A very interesting paper, by J. Ralston Skinner, on "Hebrew Metrology," was read and illustrated on the blackboard by Mr. Latimer. An able review by Mr. Hess, in the *Fort Dodge Chronicle*, of the *INTERNATIONAL STANDARD* was also read.

The meeting adjourned for two weeks.

MAY, 6, 1885.

The members elected were: Fred Bishop, Akron, Ohio; John H. O'Mara, New Lisbon, Ohio; George Leach, Riverside, California; and Charles de Medici, New York. Communications were read from J. H. Weldon, Kilmallock, Ireland, on the "Reverse of the Seal of the United States;" from Joseph Baxendell, astronomer, England, on "The Prophetic Indications of the Great Pyramid as Exemplified by Recent Historical Events;" from Theodore Faber of Brooklyn, on his "Value of Pi;" from J. R. Skinner and Henry Pierrepont, and from Alfred E. Watkins, the engineer who proposes to explore the Pyramid by means of diamond drills.

The president acknowledged the receipt of a poem on the Great Pyramid by Mrs. Thomas Bassnett of Jacksonville, Florida, which will be read at a future meeting. A book entitled "Freemasonry from the Great Pyramid of Ancient Times" was also received from the author, Thomas Holland of London, England.

Mr. Latimer illustrated by blackboard diagrams a portion of the work of Mr. R. Courtenay, "The Two Witnesses—The Bible and the Great Pyramid."

In his introduction the author says: "During the rainy season of 1879 I was stationed at Alibag, a little town on the western seaboard of the Bombay presidency. The rain fell so constantly that there was no inducement to leave the house. The society of the station consisted of four Europeans. Under these circumstances I was led by a pamphlet I found on the collector's shelves to the study of the prophetic scriptures. The Bible forthwith became a new book to me; my eyes were opened to the coming glories of the Messiah's reign on earth, and from prophecies fulfilled to the letter in the past I learned to venerate the literal words of Scripture. In the following December I met at Lahore a gentleman, at once a Christian and ardent Freemason. He put into my hands "Our Inheritance in the Great Pyramid," with the earnest request that I would devote myself to the task of proving that the Great Pyramid is, in its prophetic portions, in perfect harmony with the book of Daniel and the Revelation of St. John. Many persons are under the impression that numbers may be manipulated to any extent, and made to prove anything; probably if they themselves made the attempt they would change their opinions. My experience certainly does not confirm their view. My discovery of the prophetic periods of Daniel was not made until many months had elapsed, and from July, 1880, until the later part of 1884 I was quite unable to detect any agreement between those periods and the chronological measure of the Pyramid. Often after covering pages with calculations have I cast them aside in utter dissatisfaction, and thought for the moment that this Great Pyramid was a mere will-o'-the-wisp to lure men into endless quagmires of unprofitable speculation. But lately a study of the measures most neglected, namely, of levels, has led me to the true solution." He then shows the correlation between various historical dates and events and the measures of the Pyramid. Upon these Mr. Latimer commented.

Mr. Edward Hine then gave a short address on the Identity. He congratulated the Institute on its existence and the work it was accomplishing. He said that he had no fear that the French metric system could ever be adopted by the Anglo-Saxon race. The fact that they were Israel rendered it impossible. The perfect and just weight and measure were only given to one people on the face of the earth, and the possession of those weights and measures by our race was one proof of our identity with Israel. But one proof was not sufficient, and the speaker pointed out many facts showing the identity of the race. He believed the separation of America from England was a fulfillment of prophecy, and stated that he thought there must be a mark to testify to that separation in the Pyramid.

At the conclusion of the address a vote of thanks was tendered to Mr. Hine for his instructive remarks. The thanks of the Society were also given to the Cleveland Choral Society for their kindness in rendering several fine selections from oratorios at Mr. Hine's lecture in the Tabernacle. The meeting then adjourned for two weeks.

EDITORIAL NOTES.

Able papers from Professor Asahel Abbott, Rev. James Upjohn, Dr. Watson Quinby, Mr. F. Hess, Rev. E. P. Ingersoll, Mr. W. E. Bond and others are held over for a future issue.

Our thanks are due Mr. Samuel C. Goodsell, of Westville, Connecticut, for copies of his pamphlet, entitled 'A Book of Stubborn Facts. Trigonometrical Science, as viewed from a Practical Standpoint.' The work is dedicated to the International Institute for the Preservation of Anglo-Saxon Weights and Measures.

We must again apologize to our readers for the delay in the appearance of the Magazine. It is due to a casualty in the printing office. We trust that no one will think on account of the late issue that publication may be suspended. We intend "to keep the STANDARD floating." We have to contend with many difficulties, and we trust that all our friends will help us, if it is in their power, with money; if they cannot assist pecuniarily, that they will endeavor to interest others and increase our circulation.

We desire to call the attention of our readers to the work in this city of Mr. Edward Hine, the English lecturer on the subject of the Identity of the Anglo-Saxons with the lost ten tribes of Israel. Mr. Hine is the author of a book called 'The Forty-seven Identifications,' which has had a very large circulation. He has twice lectured in the Tabernacle to large and attentive audiences, and also in many of the churches of the city and in several private houses. He has succeeded in awakening a deep and growing interest in his theory.

"The Unveiling of Isis" will be published as a book as soon as a publisher can be selected. It will be illustrated by a number of planispheres and other engravings. It will contain twice the amount of matter already published, giving special details and explanations and throwing light upon the mysteries of heathen mythology and primeval astronomy, showing especially their connection with the history of our country and our race, or the Anglo-Saxons. This book will be published in the interests of the International Institute, and we trust that our members will send in subscriptions so that the work may be forwarded.

We have received from Mr. Alfred E. Watkins, a mechanical engineer of New York city, a prospectus of a proposed expedition into Egypt to thoroughly explore the Great Pyramid of Gizeh, by means of the diamond drill. It is proposed to fully equip a party of engineers for a stay of several months at the seat of operations. These engineers, in addition to the usual outfit provided for such expeditions, will be furnished with a diamond rock boring drill and compressor, a small steam boiler and appurtenances, suitable pumping apparatus and an electro-dynamo. Mr. Watkins considers that thirty-five thousand dollars will be necessary to meet the expenses of the undertaking. It has been thought best to raise this amount by subscription, dividing it into shares of thirty-five dollars each.

We have received a communication from a very earnest member of our Institute, stating that in the opinion of the writer some of the views set forth in the "Unveiling of Isis" are blasphemous. We sincerely regret that the religious sentiments of anyone should have been wounded. We approached the subject with reverence and with an earnest desire to uphold the truths of Scripture, and we believed that in the myths of the ancient world would be found a confirmation of those truths. We trust that when our work is completed and our design fully manifested that any who may have felt offended will see that what we have written will not tend to destroy, but to strengthen faith and reverence.

REVIEWS.

We desire to call the attention of our readers specially to the work of Mr. R. Courtenay of Bombay, India, entitled 'The Two Witnesses—The Bible, the Great Pyramid,' of which Mr. Dow has given a short synopsis in the present number of the Magazine. Professor Smyth says of the book: "It is a beginning only, but a splendid beginning." It is remarkable that Mr. Courtenay should have verified one grand date in the history of our race, probably the turning point in the history of the Anglo-Saxons, namely, the date of the battle of Waterloo, represented by the foot of the great step, or 1814+ for the beginning of the grand gallery. This was the time of the overthrow of that monarch who may be called the Apollyon of Revelation, he who went out conquering and to conquer, the first monarch who ever put his name to a decree authorizing the French metric system, and with sword in one hand and that balance in the other, went forth to overthrow the armies of Israel, and was defeated, exiled and imprisoned at St. Helena, by the people whom he hoped to conquer and give them his false measure. The attention of Pyramid students should be directed to the verification of this particular date, after which the rest may be comparatively easy.

We wish to acknowledge the receipt of a remarkable book called 'Freemasonry from the Great Pyramid of Ancient Times,' by Thomas Holland of London, England. It is illustrated by a number of engravings of the Pyramid remarkably well executed. Mr. Holland has written this work for the purpose of proving to his brother Masons the value of the Great Pyramid. He says: "Viewing the past history and traditions of Freemasonry, together with the signs, symbols, allegories and scientific teaching, illustrated by and compared with the sacred writings, on which the whole of our ceremonies are based, we

are at once led to acknowledge there is something of reverential awe in its deep researches and hidden mysteries, which from time immemorial have been passed along for our instruction and guidance throughout every age and country, from the great seat of learning and wisdom, tracing back to the land of Media among the Chaldees."

The writer of this review is not a Freemason, nor has he any prejudices against Freemasonry. He believes that it has in its keeping important secrets concealed from the time of the beginning of the order to the present time, which is the time of the sea giving up its dead, and that the grand secret which it possesses has come down to bless the whole human race. He has, then, no prejudice against the order of Freemasonry, but he has no admiration for men who join that order as time-servers, or position seekers, as men have sometimes joined the church. An esoteric Mason is a deep student of all the mysteries, and especially of those that are divine. An exoteric Mason is one of whom the apostle says, "They are not all Israel that are of Israel," but occupy the outer courts, and probably many will never enter the holy of holies. Our study of Freemasonry has given us an insight which enables us to say this in its defence, but there is as much need of an Ingersoll in that order as there is in the church to overthrow shams. Mr. Holland's book will tend to uplift the Freemasons' work and take it back to its true origin, for Bunsen says that the Pyramid was called *AOR*, which is light, and in ancient times Freemasons were called the Sons of *Light*. And now has come the time when the secret of the order, which even the most esoteric Mason of the day does not understand, shall be revealed. Mr. Holland has made a grand beginning, and we heartily recommend the book to all of our members.

The book is printed by R. Folkard & Son, 22 Devonshire street, Queen Square, London, W. C., England. It may be ordered by Cobb, Andrews & Co. or by Burrows Bros. & Co., Euclid avenue, Cleveland, Ohio.

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'THE NUMBER COUNTED 666, AND THE NAME COUNTED 888.' By the Rev. James Upjohn.

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The Banner of Israel—A weekly paper advocating the identity. Edited by Philo Israel and printed by Robert Banks & Son, Racquet court, Fleet street, London, E. C., England. Annual subscription for one copy weekly, including twelve double numbers, post free, 7s. 6d.

Israel's Hope and Destiny—This magazine, which has been published for five years as a monthly, will henceforth appear as a quarterly. It advocates the identification of the Anglo-Saxon race with the house of Israel. The editor is Douglas A. Onslow, J. P.; publisher, Robert Banks, Racquet court, Fleet street, London, England.

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On the seventh inst. we received two dollars in an envelope bearing the New York post mark but no further indication of its donor. As the omission of the name was probably a mistake, we will be obliged if any one who has sent his dues without receiving an acknowledgment will inform the secretary.

ERRATA.

Errata in STANDARD for January, 1885:

p. 629, line 18, for "moon's" *read* earth's.

p. 630, line 12, for "C sharp" *read* C.

p. 621, line 9 from below, for "H. E. Dibdier" *read* H. E. Dibdin.

INTERNATIONAL STANDARD. March, 1885. Article, "Earth's Radius," etc.

p. 49, at top: The cubits are correctly stated, but the 10 and 12 inch feet should be read *approximately* only. A mistake of the writer.

p. 49, 14th line from bottom, for "hue" *read* line.

p. 40, 8th line from bottom; and p. 41, 3d line from bottom, for "dimensions" *read* dimension.

p. 42, 3d line from bottom; p. 43, 2d line from top; p. 46, close of article; and in note at end, in the circular algorithm,

$\frac{1}{24 \times 10 n}$ or $\frac{1}{6 \times 60 n}$, *n* is to be read as an *exponent* of 10 or 60, as the case may be.

TO THE MECHANICS OF AMERICA.

We desire to reach your ears and enlist your interests in a subject which concerns every man, woman and child in the nation, and in which you have more at stake than any other class. You construct the buildings, bridges and machinery; in fact, all the works in the country, great or small.

A power has been at work for many years, silently and insidiously, to overthrow the weights and measures that you employ in the construction of everything that interests you and gives you occupation. The men who are instigating this are doing your thinking for you. They assume that your intelligence is insufficient to enable you to choose for yourselves the measures that you will use, and hence they are now petitioning Congress to set aside the system of measurement that your forefathers have used time out of mind, and to force upon you a foreign one of which you know nothing. The man who fails to use his ballot when his influence and assistance are necessary is not a good citizen, and the man who neglects to inform himself upon a subject which concerns his most vital interests, and who, through indifference, permits Congress to take away his hereditary weights and measures and to put a foreign system into his hands, is not a good citizen.

A bill was brought before the last Congress for the purpose of making the French metric system compulsory after March, 1889. Members of Congress, as a rule, are indifferent on this subject and are liable to pass the bill. If you have never investigated this matter, which so vitally concerns you, will you not now awake from your lethargy and determine that no member of Congress in the district in which you live shall have the power to change the usages of your forefathers?

If we could see that Congress had the right to make the change, and understood the true nature and derivation of that which they propose to enforce, as well as the superior value and origin of that which they may give up, then we could afford to leave it in their hands. But the majority are not instructed on this subject, and it is essential that they should be.

We claim that the Anglo-Saxon system of weights and measures is an heirloom descending to us from the remotest generations of the past; a heritage of God and divinely preserved for us, as shown in the indestructible monument in the land of Egypt—the Great Pyramid of Jeezeh.

We beg you to study this subject, and to this end we ask you to subscribe for this Magazine, which investigates the origin and value of our hereditary system of weights and measures.

THE
INTERNATIONAL
STANDARD

A MAGAZINE

DEVOTED TO THE DISCUSSION AND DISSEMINATION OF THE WISDOM CONTAINED
IN THE

GREAT PYRAMID OF JEEZEH IN EGYPT

JULY, 1885.

ISSUED BIMONTHLY. PRICE 35 CENTS

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All in favor of advancing truths most absolute, as portrayed in the revelations of the Great Pyramid of Egypt, and of the success of the Society in preserving inviolate the Anglo-Saxon weights and measures, will kindly communicate with the President, by whom also subscriptions, donations and communications will be gratefully received.

THE INTERNATIONAL INSTITUTE

FOR PRESERVING AND PERFECTING THE ANGLO-SAXON WEIGHTS AND MEASURES

CLEVELAND: 64 EUCLID AVENUE

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THE INTERNATIONAL STANDARD

JULY, 1885.

THE DRUIDS.

"Hear ye this, O house of Jacob, which are called by the name of Israel * * * which swear by the name of the Lord, and make mention of the God of Israel, but not in truth nor in righteousness. For they call themselves of the Holy City, and stay themselves upon the God of Israel. The Lord of hosts is his name," Isa. xlviii., 1, 2.

In the May number of our Magazine, page 88, the statement is made, in regard to the builders of these gigantic temples of which the ruins abound in Great Britain, that they were erected through the influence of a powerful and learned priesthood known as *Druidical*. It was also shown that there is strong evidence, that the temples combined an astronomical design with the requirements of worship. This fact points to an eastern origin for this priesthood, where devotees still bow to the Sun and dance in imitation of planetary movements. But the *Druidical* was a strangely mixed religion, it combined Sabianism with Jehovah worship, and added to both, the impure ceremonies of faith in Baal and Moloch. Its varied rites paralleled those of many oriental nations. With them it combined both mercies and cruelties. It roused both hope and fear. It was a mixture of the Divine and human, that could only have been a *growth*. It

was the conglomerated religion of "wanderers." Phoenicians, Palestinian Jews, Chaldeans, Persians, and later Greeks and Romans could each have found some point of union with these sturdy priests who symbolized their power by their gigantic temples. These Druids were priests not only of the Cymry and Gaels but of the Celts, of whom in fact the Cymry and Gaels were a part. Herodotus unites *Celtae* and *Cynetae*, (Cymry, according to Higgins), and Diodorus Siculus unites *Celtae* and *Gaels*. Under different names this priesthood appears, but these names can be traced to the same root. In "Celtic Antiquities," page 3, by John Smith, we read that "the religion of the Druids is allowed to be of the same antiquity with that of the Magi of Persia, Brahmans of India, and Chaldees of Babylon and Africa." Higgins, in his 'Celtic Druids,' says that Virgil was a Druid, and the Druids were Pythagoreans, holding the doctrine of the harmony of the spheres, as did the Pythagoreans, and that the word Pythagoras in Welsh means *explication of the universe*.

In tracing the derivation of the word Druid, we are taken to all nations and to all tongues, indicating either the wandering of these priests, or their common origin. John Smith tells us that the Celtic name for natural philosophers or magicians is still *Druidh*, meaning literally, *wise men*. One derivation is said to be from a Celtic word *Derw*, an oak. "Magic," Higgins says, "was little more than the knowledge of astronomy," and that some derive the word *Druid* from the Hebrew, *derussim*, *drussim*, or *drissim*, meaning *people of contemplation*. The Welsh word, *Drud* or *Druid*, according to Vallency, means an absolver or remitter of sins. The Irish *Druí* or *Druid* is from the Persic *duru*, a *holy man*. Ousely derives both from the Arabic *Deri*, a wise man. Persic, *Daru*, English, *Druid*. (Examine Higgins' Celtic Druids, page 94). Another derivation from Abbé Pierre de Chiniac, gives the Celtic compound *Di*, *God*, and *rouyd*, *speaking*. A writer in the Standard of Israel tells us that the priests of the Cymry were first called *Gwddon*, meaning *wise men*, and this combined with *deru*-oak forms *Der-Wyddon*, *oak wise men*. Davies gives a derivation of Taliesen's, the Welsh bard, who says it is composed of the Celtic words *Dar*, *Gwydd*, *superior*

(or high) *priest*. After examination of all these and their comparison with the most striking peculiarities of the Druidical worship, which really were the imitative processions of planetary movements I would choose a derivation from the Hebrew *Dur*, *to go round*. This would suggest a religion beginning before the Phoenicians taught their idolatry to Israel, and which is still found among the *Shakers* of our own land. A religion "scattered" as was the house of Israel, sifted "among all nations, like as corn is sifted in a sieve," (Amos 9, 9).

Perhaps if this derivation is objected to, a combination will bring us nearer to the meaning of the name, and we will consider the Druids as *priestly wise men*, astronomers, *men of contemplation*, *enchanters*, claiming *inspiration* (or those to whom *God spake*) imitators of heavenly movements, worshippers in groves, reverencing trees, and so gain a very comprehensive idea of the offices of Arch-Druid, Druid, Prophet and Bard.

The Druids say of themselves, that they were descended from the god Dis, a word easily derived from Dies. The elementary words expressed, light, water and deity. The servile letters were added by different nations, but the original meanings preserved as Dydd, Dies and Deus, God and day. The self existence of the Deity is found in these words. "The verb, *to be*, Eheyeh, as in the Hebrew of the first verse of Genesis, with its many prefixes and terminations is perhaps the most widely diffused. It is frequently to be found in the names of the Supreme Being, as in the Greek Theos and the Mexican Teotl, *He who is* the Eternal, transmitting the divine truth recognized by the elevated intellect of Plato, that God alone *is*; a sublime revelation made a thousand years before by the voice of God himself." *The Jehovah* who was, and is, and is to come. "The word contains in itself the distinguishing letters by which the three tenses of the word 'to be' are denoted," Mazzaroth, page 76. In a note appended to this is a quotation from Socrates, who says that the words Zeus, and also Dis, meaning "living and giving life," were the offspring of some great intellect.

From this god Dis, the Jehovah, the Druids say they were descended. Israel's claim is the same: "I am a father to

Israel, and Ephraim is my first-born, saith the Lord." Jeremiah, xxxi, 9.

These god-descended Druids, I propose to show, held, as priests of the Cymry, a corrupted faith like to that of the idolatrous priests of Israel. It is not necessary to repeat all that has already appeared several times in the publications of the Anglo-Israel Society, the likeness to the Jehovah-worship of Israel, the three-fold priesthood, &c., &c., but to prove that such worship as the Druids performed was exactly such as the prophets preached against, and such as Jehovah reprov'd and punished His people for ; and that which is distinctly stated as the reason of their long disinheritance. This idolatry is identical with that form of legalized idolatry condemned by the prophets as the "Sin of Samaria." Why this name is given to it will appear in a future article ; it is only necessary now to give the derivation of Cymry that we may the more clearly connect the Druids with them. The Welsh pronunciation of Cymry is "Khumri," and some of our writers have given its derivation from Shemer, Shomeron or Samaria, which is said to be called Khumri in the Assyrian inscriptions, and also from the name of Omri, the eighth king of Israel. That it cannot be derived from both is proved by the different meanings of the two words, which would necessarily have some likeness if derived from the same root. Samaria (Shomeron) in 1st Kings, xvi, 24, is said to have been so named by Omri, its builder, from Shemer, of whom he bought the land. Shomeron means watch-post or watch-mountain, while Omri means God-taught, or a servant of Jehovah. On examination it is found that it is Omri who is called Khumri in the inscriptions, and that when Samaria is spoken of, it is as *Beth Khumri*, or the house of Omri ; and his territory as Bit Humri, the land of Omri. From Omri, then, the founder of the third dynasty of Israel, we get the word Cymry, and during his reign and that of his immediate successors we must look for the rise of the priesthood known as Chemarim—dark, mourning, ascetic priests—who for some unexplained reason have come down to us as Druids. The proofs of this we will consider later and at present examine the Druidical idolatry under the head of

THE SIN OF SAMARIA.

One division of this "Sin" was the making of "standing images." This expression is remarkably descriptive of some of the Druidical remains. If they are accepted as astronomical as well as religious, they are emphatically "standing images" of the heavenly bodies. They are not "standing images" in the sense of idols, but they are representations of the host of heaven, and intended to be imperishable records of their marvellous changes, cycles, transits, movements, &c. They are not "molten images" nor "graven images," but simply in the plain words of Scripture "standing images." In Isaiah, xvii, 8, xxvii, 9, and in Ezekiel vi, 4, we have *sun images* (margin); perhaps the obelisks, said to represent the rays of the sun, may come under that head, but the prophets Hosea and Micah, who particularly warned Israel before the dispersion, speak only of "standing images," they are to be spoiled and cut off, with witchcrafts and sooth-sayings, for their sin consisted in the misuse of their knowledge and in the magical arts and dark mysteries with which they shrouded their wisdom.

These people did not hesitate to "swear by the name of the Lord," but they held it too sacred to be spoken in words; they expressed it by a triple bardic sign. Such was the symbol of Jehovah among the Jews; three Yods and one sacred Tau inscribed in a circle forming what they called the Tetragrammaton. The Yod is the first letter of the word Jehovah and the tenth (the perfect number) of the Hebrew alphabet. It is said to mean *hand*, and in both Phœnician and Samaritan alphabets the letter is a sort of likeness of a hand. The hand of God represents His creative and miracle working power, and the Celtic name for miracle is Mior-Bheil, the finger of God.

Of the circle and the Yods it is said, "The Jews drew three Yods with the point Kamets (Tau) underneath. The three Yods were so drawn as to mark the three hypostases in the Divine nature. Equal in magnitude and similar in form they denoted the co-equality of these persons. By the single Kamets placed underneath they meant to symbolize the unity of the essence common to each person." ('Buxtorf Dissertations,' p. 260). The literal meaning of Tau or Thau is a boundary or limit,

which meaning has equal significance with that of unity. It answers to the *Omega* of the Greeks, and equally suggests a boundary or ending. Higgins says that the number of the letters of the ancient Celtic Irish alphabet was seventeen. Of these, sixteen were the identical letters said to have been brought from Phœnicia by Cadmus. Originally the common letters of the Greeks did not exceed seventeen. He claims that the system of letters of the Samaritans, the Hebrews, the Greeks and the Irish Celts must have been originally the same. If so we must find that the *Yod-ha* or *Yew* of the Irish Celtic alphabet will answer to the Hebrew *Yod* and the Greek *Iota*. The triple Bardic sign of the Druids was formed of three converging straight lines, not quite meeting at the top. On examining this sign I find it composed of the Celtic *Yodha* (our *I*) three times repeated. This being the same as the Hebrew *Yod* and the Greek *Iota*. The Tetragrammaton contains the *Yod* three times repeated. The Bardic sign is the *Yodha* three times repeated. In each we have a threefold expression of the Divine existence, in each a trinity in unity. Three persons in one God. In a manuscript found among the treasures of Raglan castle, the Druidical sign is said to be the vocalization of the name of God as melodiously sounded at the creation. Higgins suggests that the name *Yew* was given to the tree from its supposed almost eternity of life. The study of this letter in all languages is deeply interesting, but this part of it is only introduced here to show the near relation of Druidical and Israelitish priesthoods. The Druids gave their instructions verbally, or wrote them upon leaves of certain trees (hence *leaves of a book*) which accounts for only traditional preservation of their wisdom. Their reverence for trees, and, perhaps, their worship of them is one of the extensive branches of the subject, (the use of "branches" suggests their mode of writing.) Stuekeley says: "The learned Schedins says they seek studiously for an oak tree, large and handsome, growing with two powerful arms in the shape of a cross, if they are not perfect they fasten a cross beam and consecrate it thus: On the right hand they cut in the bark, *Hesus*; on the middle stem *Taranis*; on the left arm, *Belenus*; on the top, *Thau*, the name of God.

Hesus in Celtic means the Supreme God, like Esar, comes from the Hebrew, Lord" (Scandinavian *Æsar*; Egyptian Osar and Osiris, the prince; Sirius, the prince). "Belenus is the Baal of Scripture, and, if traced to the original, meaning God the Son. Taranis means spirit, or lord of the air." We here find again the triad with the sacred Tau, and are reminded that they "swear by the name of the Lord, and make mention of the God of Israel." Its connection with the oak reminds me that both oaks and Druids are sometimes spoken of as Saronides.

In giving the tenets of the Druidical faith it may be necessary to repeat what may be familiar to many of our readers. I must, however, call attention to certain facts considered in their connection with the commands and warnings to idolatrous Israel.

They adored one Supreme Being, but deified not only His attributes, but His creation, in which they taught His spirit was infused. Meilyr, a distinguished bard, in an elegy, says: "I will address myself to my Sovereign, the King of the air." Now read the words of the Lord through His prophet Amos, given 775 B. C., sixty-six years before the dispersion. In chapter fourth the Lord addresses those who are "in the mountains of Samaria, which oppress the poor and crush the needy." After a repetition of many warnings, He says (verse 12): "Therefore, thus will I do unto thee, O Israel: because I will do this unto thee, prepare to meet thy God, O Israel. For lo, He that formeth the mountains and createth the wind (margin, spirit) and declareth unto man what is His thought, that maketh the morning darkness, and treadeth upon the high places of the earth, the Lord, the God of hosts is His name."

They believed in the immortality of the soul, and future rewards, and punishments, but they taught the truth with fearful mysteries, and sent the trembling soul through a series of metempsychoses. Mercury, whose name means "who cometh," presided over transmigrations, and was called by the Druids, God of our fathers, *Duru si Taddai*. Funeral rites were connected with this worship, combined with astronomical references. The Moon was his coffin, a grotto his sepulchre, he

visited Hades and then rose from the dead. The oak was important in this, as they called it the tree of immortality. "Ye shall be as an oak whose leaf *fadeth*," said the prophet Isaiah (l, 30).

In their idolatry, as in all others, there is a foundation of truth, so in the mysteries—in which was included the weeping for Tammuz—the deepest truths were represented, or misrepresented, so that they seem the hideous distortions of a nightmare. In Ezekiel 8th, a vision is recorded of this particular form of the sin of Israel, when (verse 14) he saw the women "weeping for Tammuz." Tammuz is said to be Adonis, or the Sun, and in the fable of his spending six months with Venus, and six with Proserpine, we see the alternate return of summer and winter, the feast beginning in sorrow and ending in joy. With its celebration the lowest rites were connected. In some extraordinary way representations of death and the future state were combined in these celebrations, the educated priesthood bringing all the appliances of science to depict these conditions. They bear so great a resemblance to the well-known Eleusinian mysteries that it is unnecessary to describe them. In the chapter in Ezekiel referred to, the particulars are given with the accuracy of inspiration, even the initiatory "hole" and "door," "the abominable beasts" and "men worshipping the Sun" are detailed.

But this subject of the mysteries is too extensive for the limits of this article, I will leave them with one more reference to Isaiah, whom Faber thinks accurately describes the rites of initiation into them, one part of which represented the wanderings of the soul after death. The prophet, in chapter 57, describes the vain worshippers and their funeral rites, their visiting Moloch with propitiation, their messengers (like Bacchanals and Menades), their descent into hell, and finding of life from their sovereign. Faber gives the following translation of the passage in Isaiah lvii., 9-10: "Also thou didst visit Moloch with ointment, and didst multiply thy perfumes, and thou sentest out thy messengers to a distance, and thou didst bring thyself down to Hades; with the multitude of thy progresses thou didst weary thyself, and yet thou saidest not, the matter is des-

perate. Thou hast roud the life of thy supreme power, therefore thou art no longer grieved."

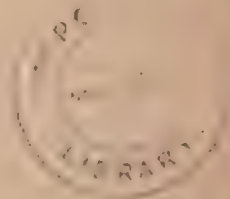
Dr. Borlase mentions a Druid monument in Scilly and Cornwall, called "hole of stone"—a large orbicular stone supported by two others, through which those passed who acquired holiness. In all the celebrations of the mysteries, a hole or a gate was necessary. It was always a small hole or a "strait gate," for in the lesser mysteries the soul's struggle was taught; as in the greater, the reward was graphically represented.

They worshipped in groves, and offered sacrifices to a pure God of the most impure of his creatures. The cat and the sow were among their sacred animals. They make Ceres assume the character of Hioch—a sow. She calls her child Porchella—a little pig; her congregation, swine; her chief priest, Turch, a boar, her heirarch, Meichiad, a swine herd. There is a triad of these mighty swine herds, which Davies says "seems to allude to the incorporation of the primitive religion of the Britons with the rites of the sacred sow of the Phœnicians."

"I said, behold Me, behold Me, unto a nation that was not called by My name. . . . A people that provoketh Me to anger; . . . that sacrificeth in gardens; . . . which remain among the graves; . . . which eat swine's flesh, and broth of abominable things is in their vessels."—Isaiah lxx., 1-4. A receipt for which broth we may find in the witches' cauldron:

"Thrice the brinded cat hath mewed—
Thrice—and once the hedge pig whined.
Round about the caldron go,
In the poisoned entrails throw—
Toad, that under coldest stone
Days and nights hast thirty-one;
Sweltered venom, sleeping got,
Boil them first—the charmed pot!

.
Fillet of a finny snake
In the caldron boil and bake;
Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder's fork and blind-worm's sting,
Lizard's leg and owlet's wing,
Scale of dragon, tooth of wolf.
.



Cool it with a baboon's blood—
Then the charm is firm and good."

—*Macbeth.*

In Ireland one of the ancient incantations was: "I call thee from the East, West, North and South; from the groves, the woods, the rivers, the fens; from the fairies—red, black and white," etc.

Faber states that the formula used by the officiating hierophant in the mysteries, was identically the same as in Isaiah lxxv., 5: "Which say, stand by thyself, come not near unto me; for I am holier than thou." The condemnation soon follows. "They that sanctify themselves and purify themselves in the gardens, behind one tree in the midst, eating swine's flesh and the abomination and the mouse, shall be consumed together, saith the Lord."—lxvi., 17. "One of the ceremonies of the Celtic highlanders is for a person who wished an answer from the oracle, to kill a bullock and sleep in his skin. This must be done in some wild situation, and the reply of the demon waited for."

To which the Lord says: "When they shall say unto you, seek unto them that have familiar spirits, and unto wizards that peep and that mutter: should not a people seek unto their god?" Isa. viii. 19.

The Druids stated their object to be, "to reform morals, to secure peace and to encourage goodness," yet they descended to every form of magic arts, and of vileness and impurity. "Thus saith the Lord concerning the prophets that make my people err, that bite with their teeth and cry, Peace. * * * Therefore night shall be unto you, that ye shall not have a vision; it shall be dark unto you, that ye shall not divine. * * * Then shall the seers be ashamed, and the diviners confounded; * * * for there is no answer of God," Micah. iii. 5-7. (thirty years before the dispersion.)

Cæsar says, "They assumed to discourse of the hidden things of nature, of the earth and of the forms and movements of the stars"—but this wisdom turns to folly when he adds—"and of the power and rule of the gods." Esus, the Celtic Mars, was their god of battles, mentioned in Daniel, xi. 38, as the god of forces; Taranis-Jupiter was the sovereign of

the aerial expanse; the Assyrians called him Belu, the Phœnicians, Baal Ram, god of thunder, Taran-thunder, hence the Welsh word taran, thunder, and the deity Taranis. The altars of Taranis were called Cromlechan, by them stands a prodigious stone or pedestal to the idol; human sacrifices were offered to Taranis. The Britons worshipped the Sun under the form of erect conical pyramidal stones, which were symbols of the solar rays. (Isaiah xvii., 8. Sun images, see marginal translation.) These altars were called Meini in ancient British. The Phœnicians named the Sun Baal, Sameen—lord of the heavens. On the mainland of Orkney, near the island of Pomona, is an erect stone with Belus on it. The stones placed for worship are usually ascribed to the Celts; the ancients distinguished these stones erected with religious views as amber stones, signifying sacred. Congain, or vast mounds of earth or heaps of stones, called in the primitive language Carnen, were sacred to Apollo, and are all over Britain. One fire was kindled on the carn, and the other on the ground, between them those to be sacrificed passed, hence the proverb "between two fires." For authority on this see essay on mythology of ancient Britons in the 'Transactions of the Cymmrodorion.' Sixty years before the dispersion these words were spoken: "When I would have healed Israel, then the iniquity of Ephraim was discovered, and the wickedness of Samaria," Hosea vii. 1. "They went to Baal-peor, and separated themselves unto that shame," ix. 10. "My God will cast them away, * * * and they shall be wanderers among the nations," ix. 17. "Israel * * * hath increased the altars; * * * they have made them goodly (standing) images," x. 1. "They sacrificed to Baalim, and burned incense to graven images," xi. 2.

They worshipped in temples open at the top, because God could not be confined in a building made by man; but the smoke of human sacrifices ascended, and the Lord dwelt not in a temple desecrated and unholy: "For when they had slain their children to their idols, then they came the same day into my sanctuary to profane it. * * * And ye shall bear the sins of your idols, and ye shall know that I am the Lord."—Ezekiel, xxiii. 39-49.

They worshiped Apollo as the god of medicine, and possessed considerable knowledge of the healing powers of plants; but it was filled with superstition. They attributed sacred characters to herbs and trees. The mistletoe (apparently a symbol of the great healer) and the marshwort were sacred. The hedge hyssop and the vervain were said to have magical qualities. "Root of hemlock digged in the dark" (its juice was used for the purification of the priests) and "slips of yew slivered in the moon's eclipse," had mysterious power. When a mistletoe entwined an oak there was a feast of rejoicing, and the leaves of the tree were scattered to heal diseases.

There is no condemnation for the use of plants for the relief of suffering; Isaiah ordered figs for Hezekiah's malady, and the leaves of the tree of life are to form an all-healing cure for the sin sickness of the nations, but the mixture of idolatry with this is especially reprov'd in the case of Ahaziah, who sent to Baal-zebub, the god of Ekron, to ask if he should recover from his disease. "Is it because there is not a god in Israel, that ye go to inquire of Baal-zebub, the god of Ekron? Now, therefore, thus saith the Lord, * * * thou shalt surely die," was the message of the prophet to the king of Samaria. The meaning usually given to Baal-zebub is "god of flies." Higgins, however, denies this; he was certainly some form of the universal Baal, and from Ahaziah's action seems to have been endowed with some healing power.

The serpent's egg was a talisman, and there is reason to believe that serpents were worshiped. This idolatry is generally to be found in connection with tree worship. The serpent and the tree were very near in Eden, and are united in most of the Oriental idolatries. Hezekiah was obliged to destroy the Brazen Serpent, because it had become an object of worship, instead of only a sacred relic. Some excuse for serpent worship is given by those who make this creature a god of wisdom; the Druids, perhaps, considered themselves justified by placing the serpent in the heavens as the ecliptic, which it represents, but are condemned by Him who says of the doctrine of the Nicolaitanes (which was serpent worship): "So hast thou also them that hold the doctrine of the Nicolaitanes, which thing I hate."

Fergusson denies that the Druids worshiped the serpent, yet he finds evidence of this low idolatry among the Picts of Scotland. He says: "We shall probably not err far, if we regard these traces of serpent worship as indicating the presence in the northeast of Scotland of the head of that column of migration, which, under the mythe of Wodenism, we endeavor to trace from the Caucasus to Scandanavia. The Edda seems sufficient to prove that a form of serpent worship did certainly prevail in the latter country, in the early centuries of the Christian era, and nothing seems more in accordance with Pictish traditions, than that it should have passed thence into Scotland and left its traces everywhere between the Orkneys and the Firths. The traces of it that may exist in England or Ireland, probably belong to an earlier pre-historic people and may have been introduced by another and more southern route" (Tree and Serpent Worship, by John Fergusson, p. 32).

There seems no mention of serpent worship in the Bible till after the Brazen Serpent, the history of which accounts for the reptile being counted the god of health. His claims to wisdom come from the ability he showed in offering to the woman the knowledge of the gods, instead of any worldly bait! It is possible that the reverence for the serpent found among the Druids, may have been chiefly connected with the worship of Saturn, or of Hercules. There were two serpent emblems: those connected with time, having narrow pointed heads (harmless), while the serpent enemy (poisonous), has a broad head. This distinction is found in most ophite worship. The ecliptic is represented as the serpent with the pointed head. One of their deities was Ovana, the goddess of the ocean, and she is represented in Tours (France) with wings above her head, two large scales near her ears, and her head encompassed by two serpents, with their tails hidden behind the wings. There are many curious representations of serpents entwined about certain figures among the records of the Celts of France, but it is impossible to consider further this branch of the subject. Serpent reverence, if not worship, cannot be safely denied of the British Druids.

E. BEDELL BENJAMIN.

STUDY OF TEXTS—GEOGRAPHY OF MOSES.

Goshen—Rameses. We meet these two names in Genesis. According to some writers one is Hebrew, the other Egyptian. Others say both are Egyptian. They designate the country granted by the Pharaoh of Joseph to Jacob and his children.

"Dixit Itaque rex ad Joseph; pater tuus et fratres tui venerunt ad te: in optimo loco fac eos habitare, et trade eis terram Gessen."

Joseph vero patri et fratribus suis dedit possessionem in Egypto, in optimo loco terrae, Ramesses, ut praeceperat Pharaon: habitavit ergo Israel in Egypto, id est terra Gessen, et possedit eam." (Gen. xlvii., 5-27.)

We also find them used in the same sense in Exodus and in Numbers:

"Tantum in terra Gessen, ubi erant filii Israel.—Profectique Israel de Ramesse. (Ex. ix., 26.—xii., 37.) Profecti igitur de Ramesse." (Numbers xxxiii., 3.) But Rameses is also the name of one of the two cities that were built by the Hebrews for a Pharaoh who oppressed them: *"Edificaveruntque urbes tabernaculorum Pharaoni, Pithom et Ramesses,"* (Ex. I., 11.)

And this identity of name has caused a confusion more or less voluntary among the commentators, who, at the time of the exodus, give the place of departure as the city, and not the land, of Rameses.

Moses describes in detail the scene of the departure, and shows us the Hebrews slaughtering the lamb, marking with the blood the lintels and door-posts of the houses they occupied, either as proprietors or as tenants (*Postulabit mulier a vicina sua, et ab hospite sua* (Ex. iii., 22), where they carefully shut themselves in through the night to eat the feast of the passover. (Ex. xii. and xiii.) In the morning, being importuned by the Egyptians, they departed in great haste, bearing on their shoulders the unleavened dough which they had not taken time to bake. Where were the great mass of these homes situated?

Evidently in the *land* of Rameses, and not in the city, which could have accommodated only a small number of them. Now the first stopping place was Succoth, the second Etham (Numbers xxxiii., 5-6), hence it is evident that the city of Rameses is not named in the account of the exodus. Moreover, the confusion possible to the rigour of the Vulgate, and even with the Hebrew text, is not possible with the Septuagint, which says explicitly "*The land of Rameses.*" The name of Rameses belonged to many of the Pharaohs, and undoubtedly attached to the oppressor who built the two cities; he gave his name to one of them, probably to the most important, as well as to the country at large; and if Moses employed it in Genesis, it is because at the time when he wrote—that is to say, after the exodus—the two names, Rameses and Goshen, were equally in use.

David teaches us that Goshen belonged to Tanis, or Zoan.

"*Fecit mirabilia in terra Egypti, in campo Taneos. Prodigia sua in campo Taneos.* Ps. lxxviii., 12-13, whence it follows that that city was the capital of the Pharaoh of Josephs' time; for the latter, in installing his father, said, "*Habitabis in terra Gessen; erisque juxta me.* Gen. xlvii., 10."

Jacob, arriving in Egypt with his wives, children, grandchildren, servants, flocks, herds, and all his goods, *waited in the land of Goshen*, and sent Judah to inform Joseph of his arrival. (Gen. xlv., 28). Evidently he could not cross the Pelusiac branch of the Nile with his whole people, without the consent of Pharaoh, neither did he desire to do so. It is there, then, that the land of Goshen is situated. One of the reasons why Joseph had placed his father in this land was the hatred the Egyptians felt toward shepherds, "*quia detestantur Egyptii omnes pastores ovium.*" There were then no Egyptians in the land of Goshen, consequently, it was not, properly speaking, in Egypt; this explains why it says in Genesis: "*Habitavit ergo Israel in Egypto, id est in terra Gessen,*"—Israel dwelt in Egypt,—that is in the land of Goshen. Really the ancient limitation of Egypt was the river Nile, which separated it from Arabia; thus the Septuagint says: *Goshen in Arabia*. This circumstance explains very clearly the facility with which the Israelites were installed in their new homes. Really, the country not being protected

by the Nile against the invasion of robbers, could not have permanent homes, and was only suitable for nomadic tribes. Therefore the small tribe of Jacob, composed of not more than four or five hundred persons, and several thousand head of cattle, had only to erect their tents, with the permission of Pharaoh, in some unoccupied district; and to send their flocks to graze in the green pastures of the Nile, to find themselves regularly established there.

In this goodly land—"optimo loco,"—Israel multiplied with rapidity, and soon replenished it. "*Habitavit ergo Israel in terra Gessen et possedit eam. . . . ac roborati nimis impleverunt terram.*" (Gen. xlvii., 27)." At the time of the exodus they numbered 600,000 men capable of bearing arm; these, with the women and children, would constitute a population of nearly two millions. Now if we consider the fertility of the soil, the tranquility enjoyed by the children of Israel, and the longevity of the men of those times, this multiplication is not excessive. At the least we count two hundred and fifteen years from Jacob to the exodus. Now if we estimate the number of those who came with him to Egypt, at four hundred, and annual increase of four per cent. will be sufficient to attain the number of two millions; and of four and a half per cent. if we consider only his seventy direct descendants and their wives, in all one hundred and forty persons. If we count four hundred and thirty years, according to the Vulgate, (Gen. xii.,), the per cent. will be very much smaller. But this was not all the population of Goshen; there were also many Egyptians; the rich of whom the Hebrews demanded gold and rich clothing, to hasten their departure, and the poor, of whom a multitude went with them, (Ex. xii., 38); altogether, we should be able to estimate the inhabitants of Goshen at that time, to number about three millions. To arrive at this result, they must have utilized all of the cultivable land on the right bank of the Pelusiac; for the country did not extend upon the left bank, since at the exodus the Hebrews were not obliged to cross the Nile. The pastoral life had been abandoned, and the children of Israel had become agriculturists. Without doubt we may attribute to them the digging of the canals derived from the Pelusiac, which irrigate the land. You must observe that

really in Egypt, where there is no water except that furnished by the Nile, that it is the soul source of fertility. Wherever the canals conduct it, the soil is cultivable; but the desert commences where irrigation ceases.

The land of Goshen then extended along the Pelusiac branch, from the Mediterranean on the north to the Memphian desert at the south, where the elevation of the land rendered further irrigation possible; and it extended more or less into the desert of Palestine, according to the length and development of the canals.

The cities of Rameses and Pithom. Rameses and Pithom are two cities built by the Hebrews for Pharaoh the oppressor. The Vulgate calls them "*urbes tabernaculorum*,"—cities of store-houses; other version call them cities of forts, cities of treasure. This would make it appear that they were designed to command the country, and that they had forts, garrisons, and warehouses for storage of food in sorts. For this purpose they would best be placed upon the water courses of the frontiers, and at opposite extremities of the land, the better to serve their purpose; Rameses, the principle one, since it bore the king's name, and Pithom centrally situated upon some important canal. The Egyptian cities, situated upon the Pelusiac, keeping to the west, and the Hebrew cities bounded on the east by the desert.

Succoth, Etham. These are the first two stopping places of the journey.

"*Profecti igitur de Ramesse . . . castrametati sunt in Soccoth, et de Soccoth venerunt in Etham quae est in extremis finibus solitudinis.*" (Numbers xxxiii., 5-6.)

It was at Succoth that they cooked the dough that they had borne upon their shoulders (Ex. xii., 39); they found there, then, both fuel and water, as well as at Etham, since they lacked neither until, after the passage of the Red Sea. (Ex. xv., 22.) Besides, as Etham was situated at the border of the desert, that is to say, at the extreme limit of cultivation it is certain that water was plenty up to that point precisely, but no further, since there commenced the desert. The canal that brought it there was evidently the one the Hebrews had encountered in the olden time at Succoth, and which they had not been able to cross on

their arrival in the land of Goshen, because of their large flocks and herds and the train of baggage that accompanied them.

The choice of Succoth as a point of rendezvous indicates that the place had among the Hebrews a certain notoriety, whether because of the abundance of wood and water, or from some other cause. It is clear that Moses, to avoid error, was obliged to name some point well known. This proves conclusively that the opinion of those who, because of the encampment, derive the name from the Hebrew Succoth, *tents*, cannot meet with approval, as it, in a manner, constitutes a begging of the question; for the place must have borne a name before the publication of the order which convoked the people there.

Now let us study the march of the Israelites. When God, on Mount Horeb, commanded Moses to present himself before Pharaoh, he said to him: "*Sed ego scio quod non dimittet vos rex Egypti, ut eatis, nisi per manum validam. Extendam enim manum meam et percutiam Egyptum in cunctis mirabilibus meis, quae facturus sum in medio eorum: post haec demitet vos.*" (Ex. iii., 19-20), "And I am sure that the king of Egypt will not let you go, unless he be compelled by a powerful hand. And I will stretch out my hand and smite Egypt with all my wonders which I will do in the midst thereof; and after that he will let you go."

Moses tells us: "*Perfecti sunt filii Israel in manu excelsa; videntibus cunctus Egyptiis, et sepelientibus primogenitos, quos percusserat Dominus.*"—The children of Israel went out under the protection of a powerful hand, in the sight of all the Egyptians, who were burying their first-born which the Lord had smitten." (Numbers xxxiii., 3-4). In twenty other places he uses the same language.

This very strongly resembles a triumphant departure; nevertheless Pere Sicard tries to prove that they got away by strategy or ruse, and not by authority.

If he is to be believed, Pharaoh never supposed that it was a question of absolute departure, and the permission that he gave related solely to that three days journey into the wilderness for sacrificial purposes, of which Moses had spoken at first. He, seeing the King's error, had been careful not to explain more fully. He departed toward the left, then toward the right,

hoping by this means, with his unwieldy caravan, to escape the horsemen, that Pharaoh would not fail to put upon his track as soon as he should discover he had been duped. It is thus that Pere Sicard explains the change of route to Etham and the pursuit of Pharaoh.

This strategy is neither very profound nor very loyal, and it is difficult to admit it; it is also altogether incorrect to say that Pharaoh believed the point in question to be merely a three days' journey. In reality, when, after the threatened plague of the locusts, Moses demanded permission to depart with his old men, his women, children, his flocks and herds, Pharaoh noticed the very great augmentation of his demands, and discovered his designs, since he said to him, in retaining the women and children, "*Cui dubium est quod pessime cogitatis? non fiet ita: Sed ite tantum viri et sacrificare Domino; hoc enim et ipsi petistis.*" (Ex. x., 10-11.) Who doubts but you may have some evil designs. It may not be. But go with your men alone and sacrifice to the Lord; for this is what you yourself have desired." If, then, later, under the pressure of a "*powerful hand*," he is forced to let them go, he knows very well that they depart to return no more.

Pere Pujol neither admits the permission, nor regrets for having accorded it. "Nowhere in Exodus," he writes, "will you find a single word from which it may be lawful to deduce repentance over the departure of the Hebrews." The reason of it lies in the fact that Pharaoh never consented to let them go." (Entud. relig.) This conclusion appears very strange; for if the word *to repent* is not in Exodus, the thing itself most assuredly is there; however, if he insists upon the word we shall be able to find it in other places.

"*Quoniam, cum ipsi permississent ut ce educerent, et cum magna sollicitudine præmississent, illos consequebantur, paenitentia acti. Adhuc inter manus habentes luctum, et deplorantes ad monumenta mortuorum, aliam sibi assumpserunt cogitationem inscientiae, et quos rogantes projecerant, hos tanquam fugitivos persequiebantur.*" (Sag. xix., 2-3). "For though they themselves, had permitted them to depart and had hastened their departure, they repented themselves of it and resolved to pursue them.

While they were still weeping over the tomb of their slain children, they madly took another thought and started to follow as fugitives, those whom they had implored to hasten away."

Monsieur l'Abbe Vigouroux, without accepting all the ideas of Pere Sicard, believes, nevertheless, that Moses had been careful that Pharaoh "might not suspect the sequel of his real design." And more than that he commits a fresh blunder when he says that "The road that the Hebrews had followed as far as Etham, led directly and by the shortest route into Palestine, to Gaza, in the land of the Philistines; but on arriving there, it was imperative that God should reveal his real design, in announcing that he wished to conduct them toward Sinai, making them march toward the South instead of the North."

On the contrary, it is certain that Moses had to march on the route to Sinai, which the Lord had specified to him as the place where he was to receive the testimonial of his mission: "*hoc habebis signum quod miserim te; cum eduxeris populum meum de Egypto, immolabis Deo super montem istum.*" (Ex. iii., 12.)

Some raise the objection that this verse does not say that "Moses shall conduct the people to Sinai, but that when he shall have brought the people out of Egypt, Moses shall offer a sacrifice to them." This is a mere criticism upon the words. Nevertheless, Moses tells us in other places that from the outset he took the road to Sinai, and not that to Palestine, and gives the reason why: "*Igitur cum emississet Pharaon populum, non eos duxit Deus per viam terrae Philistin quae vicina est; reputans ne forte poeniteret eum, si vidisset adversum se bella consurgere, et reverteretur in Egyptum; sed circumduxit per viam deserti quae est juxta mare Rubrum.*" (Ev. xiii., 17-18.) "When Pharaoh had let the people go (consequently as soon as the permission had been given), God did not conduct them by the way of the land Philistines, which was close at hand; . . . but God led the people about, through the way of the desert which lies along the Red Sea."

Thus, therefore Moses never did hide and never dreamed of hiding his real purpose from Pharaoh, who perfectly understood

it. He did not take the route to Palestine at first long before, he knew he must double the Red Sea in order to follow the Asiatic bank as far as Sinai or Horeb. Monseur l' Abbé Vigouroux does not correctly interpret, then, the circumstances of the exodus; and, for the best instruction, let us simply listen to Moses himself. He tells us that in the night on which they ate the passover, carefully shut within their houses, situated in Rameses, (evidently the country, and not the city), the Hebrews departed towards Succoth, upon the desert route which borders the Red Sea; having left Succoth, they camped at Etham, at the extreme limit of the desert. They took with them a multitude of common people, quantities of provisions of all kinds, and flocks and herds.

"Nullus vestrum egrediatur ostium suae, usque del mane (Ex. xii., 22). Profectique sunt filii Israel, de Ramasse in Succoth, (37). Sed et vulgus promiscuum innumerabile, ascendit cum levis, oves et armenta, et animantia diversi generis multa nimis, (38). Dominus circumduxit per viam deserti quae est juxta mare Rubrum, (xiii., 18). Profectique de Succoth, castramentati sunt in Etham, in extremis finibus solitudinis, (20).

At Etham Moses had a revelation, in which according to Mon. l'Abbé Vigouroux, God should have made known to him "that He wished to conduct them in the direction of Sinai." I do not know whence he derives that opinion, but I doubt if it be in the Bible, for on the contrary, Moses tells us that he received the order to turn back again to Egypt, and encamp at Pihahiroth, opposite Beelzephon, on the border of the Red Sea. *"Reversi, (or, according to others, conversi), castramententur a regione Phihihiroth . . . contra Beelsephon . . . in conspectu ejus, castra ponetis super mare."* (Ex. xiv., 2).

Moreover, God told him this manoeuvre was for the purpose of preparing a chastisement for Pharaoh, who, in violation of his word, had brought his army in pursuit of them. *"Indurabo cor ejus ac persequetur vos; et glorificabor in Pharone et in omni exercitu ejus. Scientique Egyptii, quia ego sum Dominus, (xiv., 4)."* "I will harden Pharaoh's heart, that he shall follow after them; and I will get me honor of Pharaoh and of all his hosts. That the Egyptians may know that I am the Lord." The last line

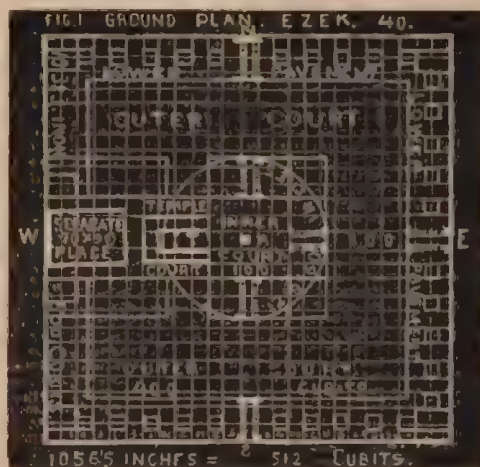
conveys to us the reason for it all. "For it was an extreme necessity that forced this issue; the Egyptians had ignored the lessons they should have learned from past events, so that this punishment completed what was lacking in former chastisement; and that where your people passed miraculously, they found a new occasion of death." *Livre de la Sagesse.*, xix., 4-5).

We draw from this, new information about Etham. We have already seen that it was the terminus of the canal which passed by Succoth; we now know that it was upon the route, which, doubling the Red Sea, conducted to Sinai, and that after one day's retrograde march they found themselves on the Egyptian bank; then, necessarily, it was situated toward the upper end. In this position, which would put it on the route to Egypt taken by the caravans of the desert, or the navigators of the Red Sea, Etham was, undoubtedly a commercial center, that is, a city of importance in a certain sense. We must here take cognisance of the fact that the desert which borders the eastern shore of the Red Sea bore two names; that of Etham, according to Numbers: "*Et ambulantes tribus diebus per desertum Etham,*" (Numb. xxxiii., 8), and that of Shur, according to Exodus, "*Et egressi sunt in desertum Sur,*" (Ex. xv., 12). Just as the country inhabited by Israel was called Goshen and Rameses. The mount of the Lord, which plays so grand a role in the deliverance of the Hebrews offers us a third example of this double nomenclature. In the third chapter of Exodus, where God announces to Moses that it is upon that mountain that he shall receive the confirmation of his mission, it is called Horeb; whilst in the xix and following chapters, where the events occur it is called Sinai. In Deuteronomy the name Horeb is more often employed. But it is the same mountain, and therefore bears two names, probably in two different languages.

(The above paper translated from the French by Mrs. A. M. Searles.)

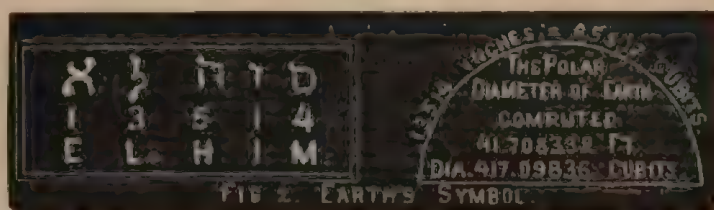
THE TEMPLE-VISION OF EZEKIEL.

It is recorded by the prophet that, in the twenty-fifth year of his captivity, in the beginning of the year, in the tenth day of the month, in the fourteenth year after that Jerusalem was smitten, he was brought, in the visions of God, into the land of Israel and was set upon a very high mountain, by which was the frame of a city on the south. This record is followed with a minute description of the wall, the gates, the courts, the temple and the altar, together with various other appointments relating to the design of the city. The revelation was made under circumstances of great solemnity. A man stood in the gate, whose appearance was like the appearance of brass, with a line of flax in his hand and a measuring reed, and he said to the prophet, Thou art brought hither to the intent that I might show thee what thou shalt declare to the house of Israel. The man then measured the city, the wall, the gates, the courts, the temple and the altar. Our paper is a study of these measurements.



Admitting the Temple-Vision to be a Divine revelation, we must premise that the numerical terms used in its description signify something worthy of its source. Whether we have touched the

truth of the matter may be left to the test of evidences. We approach the subject reverently, with no desire to transform that marvellous revelation into a mere mathematical curiosity, nor yet in the presumption that we see more than a small fraction of what the vision may signify. The facts, however, which we shall present cannot be gainsaid.



The city, Fig. 1, consists of an inner court 100 cubits square in the center of which is the brazen altar A. To the west of this court is the temple, T, 20 cubits wide and 60 cubits long, and still farther to the west is the separate place, 70×90 cubits. On the north, east and south sides of the inner court are gateways, G, G, G, 50 cubits long, leading to the outer court, which is 400 cubits square. From the outer court three corresponding gateways, 50 cubits long, lead across the lower pavement to exits in the enclosing wall. Upon the lower pavement indicated by the small squares are the thirty buildings not measured, nor very definitely placed in the vision. The space enclosed by the wall is 500 cubits square, which, laid off into 25 equal squares, would give the central space of 100 cubits square, in the midst of which is the altar, A.

It was the custom of the ancient Hebrews to designate numbers by the letters of their alphabet, in alphabetical order. Thus: A or Aleph stood for 1, and B or Beth for 2. The numerical value of letters appears to have been the basis of certain words used in Hebrew metrology to indicate the relation of one measure to another, as the log, the bath, the seah, etc. In this way names served as numerical descriptions or symbols of things. Two names, Elohim and Jehovah, are very prominent in the

Temple-Vision. The letters, with their numerical values, stand as follows:

E-Lo-H-I-M. Je-Ho-Va-H.
 1 3 5 1 4. 10 5 6 5.

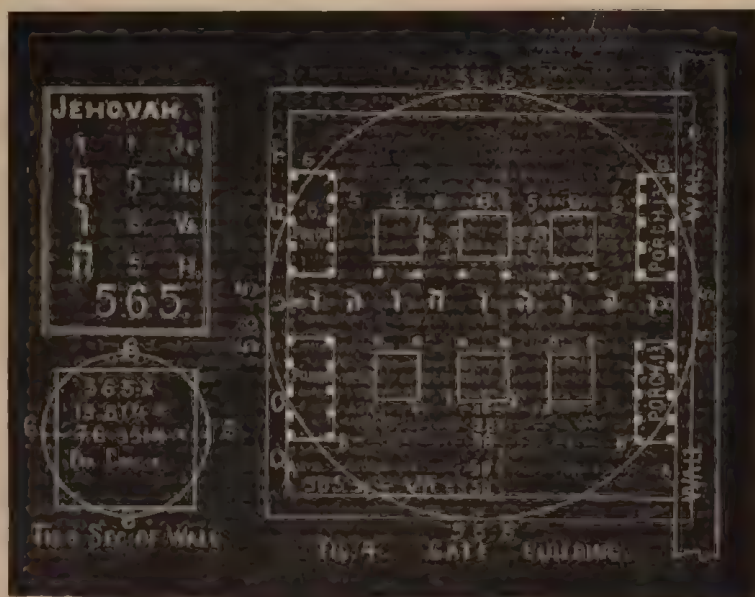
But letters, according to the intention of the writer had a decimal change of value; thus, L might stand for 30 or 300. On this principle Elohim could have the numerical value 103514, and Jehovah could be numerically written, 1565. The word Jehovah is derived from the verb Ha Va H, which means to

be, exist, hence 565 may be taken as the shorter numerical symbol of Jehovah. We purpose now to show that the measures of the temple and city of Ezekiel are simple and systematic combinations of these numerical symbols of Elohim and Jehovah. The measures are given by the prophet in round numbers, evidently the proper way to use numbers symbolically. Wherefore the coincidence, we shall note are integrally true though not decimally exact. In the Hebrew and Anglo-Saxon correlations we give here, the cubit is taken to be 20.626 or 20.625 inches.† Before exhibiting coincidences in the Temple-Vision we may note a striking coincidence between the numerical form of Elohim and the polar diameter of the earth. Let the semicircle, Fig. 2, be $\left\{ \begin{matrix} \text{E} & \text{Lo} & \text{H} & \text{I} & \text{M} \\ 1 & 3 & 5 & 1 & 4 \end{matrix} \right\}$ inches, = 655.17657 cubits, then the diameter will be 417.09836 cubits, which coincides remarkably well with the number of feet obtained as the best result of the Russian, French and Indian measures for the polar diameter,

† An old Egyptian cubit in the Turin Museum is divided into 28 digits, 25 being of uniform length .729 inch. The 15th and 24th are especially marked giving a particular measure of 9 digits or 6.561 inches, which is the diameter of a circle having a circumference equal to the whole length of the cubit or 20.611 inches, or 28.28 digits of .729 inch each. Now 28.28 is $\frac{1}{2}$ of the Jehovah symbol 56.56. If we extend this half symbol to 28.2828 and also the digit measure to .82925, nine of these digits give the diameter of a circle having a circumference equal to 20.619 inches, or the whole length symbolically would be $28.2828 \times .72924 = 20.625$ which is the cubit of the Temple-Vision. It thus appears that the cubit itself by number and by measure symbolized Jehovah or the Divine Presence. As the entire system of Hebrew metrology was built on the cubit, it follows that the name of Jehovah was identified with all the weights and measures of the Hebrews, and we believe that the same identification may be shown in Anglo-Saxon weights and measures. See *Ast. Metrology*, Vol. 2, No. 6, International Standard. The symbols 5.65 +, expresses the value of *apparent* gravity at the *equator*. See *Deschanel's Nat. Philosophy*, pp. 61, 66, 67. Appleton & Co., New York, 1876.

41,708,332. In the language of symbolism this might be read God sitteth upon the circle of the earth.

The height of wall being 6 cubits and the thickness 6 cubits, a transverse section of it, Fig 3, is a square 24 cubits in perimeter. But the symbol of Elohim, 13514, multiplied by the shorter symbol of Jehovah, 565, is 7635410, or the diameter of a circle having the circumference 2398720. The one thousand thousandth part of this is 23.98 or in round numbers 24. A circle being the symbol of eternity, the enclosing wall of the Vision may symbolize Elohim and Jehovah in eternal union or oneness round about the city of God, as a wall of defence.



The gateways or gate buildings, three outer and three inner, are alike, Fig 4. The length of each is 50 cubits, there being a clear passage-way of steps through the middle 8 cubits broad. It is equal to the side of a square whose area is equal to that of a circle having a diameter of 56.5 cubits, and is divided thus:

A porch at each end 6 cubits deep, 2×6 , 12 cubits.
 Three little chambers on either side 6 square, 3×6 , 18 "
 Four spaces between the chambers 5 deep, 3×5 , 20 "

—
 Total, 50 cubits.

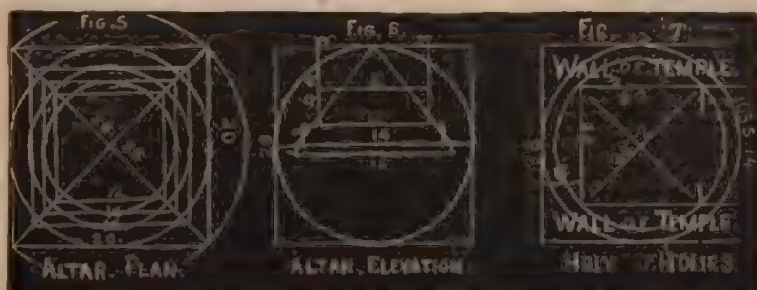
Thus each Gate-Building is laid off in alternate sections of 5 and 6 cubits; 6-5-6-5-6-5-6-5-6, which is a bold numerical exhibit of the Jehovah name symbolized in the numbers 5-6-5.

But Elohim in union with Jehovah is also symbolized in the Gate-Buildings in a remarkable manner. The product of the two symbols taken decimally in hundredths is .76 By this decimal fraction and 50 cubits the length of the Gate-Building we may lay off its sections of 6 and 5 thus, Fig 4:

50	=	50.00	or in round numbers, 50 = a a.
$50 \times .76$	=	38.00	" " 38 = b b.
$50 \times .76^2$	=	28.88	" " 28 = c c.
$50 \times .76^3$	=	16.66	" " 16 = d d.
$50 \times .76^4$	=	5.565	" " 6 e e.

The little chambers being 6 cubits square may have the same symbolical meaning as the wall section, 6 cubits high and 6 cubits thick; while every space between the little chambers, measured round about, is 5-6-5-6.

The depth of the outer court, Fig 1, is 100 cubits, but if one step, one cubit deep, be allowed outside of the inner Gate-Building, which has eight steps instead of the seven of the outer Gate-Building, there will be a clear space of 99 cubits between the outer and inner gateways, or nine times (5×6) cubits.



† The inner court, Fig 1, is 100 cubits square. A division of it into 25 equal squares gives a central space 20 cubits square

wherein stands the Brazen Altar A. The symbolism of this square and of the Altar built upon its geometrical lines is worthy of notice. Let $56.5 \div 2 = 28.25$, be the diameter of the outer circle in cubits Fig 5, the side of its inscribed square is in round numbers 20 cubits, which is the measure of the Holy of Holies. Now let a circle be inscribed within this square, then a square equal to it, in perimeter, will have a side 16 cubits, which is the measure of the base of the Altar, 16 cubits square. Again let a circle be inscribed within this base-square, then a square equal to the circle in area will have a side of 14 cubits which is the measure of the settle, 14 cubits square. Once more let a circle be inscribed within this settle-square, then a square equal to the circle in area will have a side of 12 cubits, which is the measure of the Altar, 12 cubits square.

The following table shows the measures to the second place of decimals and in round numbers:

One-half of the Jehovah symbol, $56.5 = 28.25$ cubits.

Diameter of outer circle, 28.25 cubits.

Side of inscribed square, 19.97 "

" of the Holy of Holies, round numbers, 20.00 "

Diameter of first inscribed circle, 16.97 cubits.

Side of square of equal perimeter, 15.70 "

" base of the Altar, round numbers, 16.00 "

Diameter of second inscribed circle, 15.70 cubits.

Side of square of equal area, 13.92 "

Side of settle of the Altar, round numbers, 14.00 "

Diameter of third inscribed circle, 13.92 cubits.

Side of square of equal area, 12.33 "

" of Altar symbolical measure, round numbers, 12.00 "

The base of the Altar is one cubit high, Fig 6, the settle is 2 cubits, the altar above the settle is $4 + 4 = 8$ cubits; hence from the top of the base to the top of the Altar is 10 cubits, which is the radius of the circle inscribed in the 20 cubit square. Symbolically therefore this is a π Altar erected within a square of 20 cubits the diagonal of which is $\frac{1}{2}$ of 56.5. In view of these measures of the Holy of Holies and of the Brazen Altar we may say, in the reverent language of symboli-

tic numbers, the name of Jehovah traces a cross upon the floor of the Holy of Holies and beneath the Altar of Sacrifice. But Elohim encompasses the Holy of Holies. Let the symbolical circumference 2×1035.14 inches be drawn concentric with the Holy of Holies, Fig 7. The diameter of this circle is 31.9 cubits or in round numbers 32, and the side of its circumscribed square is 32 cubits. The Holy of Holies being 20 cubits square the space between these two squares is $\frac{32-20}{2} = 6$ cubits, which is the thickness of the wall of the temple. If then the Holy of Holies is "crossed" on its floor by Jehovah it is encircled in its wall by Elohim.

The Position of the Holy of Holies in relation to the Brazen Altar is unique. From the centre of the Altar A, Fig 1, to the outer face of the inner gateways is 100 cubits. The circumference of a circle having a radius of 100 cubits, with its centre in the midst of the Altar, will touch the centre of the Holy of Holies, and measure 200π cubits or 12,960 inches equal to one one-hundredth of the number of seconds in a circle or one one hundredth of the number of grains in the ancient Hebrew gold talent which means circle. No doubt the symbolism of the measures of the Temple-Vision had many ramifications in Hebrew life, most interesting and significant; but enough is here given in evidence that the measurements of the Vision signify the Divine character of the city, its walls its gateways, its courts and temple, its buildings and appointments. The sacred names appear to be traced everywhere by the line and by the square.

To many of our readers the following coincidences brought out in the study of our subject cannot fail of interest. The space enclosed by the wall in the Temple-Vision is five hundred cubits square. Squareness, five-ness and π -ness, as we have shown, are notable features of the Vision—the inner court consisting of 25 squares, each equal to the area [of] the Holy of Holies, and the whole inclosure consisting of 25 squares, each equal to the area of the inner court. The Great Pyramid is in like manner notable for squareness, five-ness and π -ness. Of the value or significance of the coinci-

dences now to be presented we need not speak; the factes must certainly attract attention.

Extending beyond the base of the Pyramid is a pavement of uncertain breadth. It is computed from certain rock cuttings which are supposed to be its boundary lines. The outer edge of these rock cuttings varies from 530 to 628 inches in distance from the sides of a central square $9,068.8 \times 9,068.8$ inches ('Petrie's Pyramids and Temples of Gezeh, p. 45). The extreme mean distance between the cuttings on the N. and S. sides at about 750 inches from the W. side is computed from the following measures Width of pavement, N. side, 615.9, 618.7, 616.2, mean 616.9; S. side, 627.9; sum of N. and S. sides, 1,244.8; which, added to the breadth of the central square, 9,068.8, gives 10,313 inches, \approx 500 cubits (Fig. 8) the outside measure of the pavement from N. to S., which is the measure of the space enclosed by the wall in the Temple-Vision, 500 cubits square.



The Pyramid is built in courses of varying thickness, but apparently with regard to a certain fineness of design—a specially thick course being followed by a graduated series of thinner courses. The horizontal bars in fig. 8 indicate the relative positions of these thick courses. Now, it so happens that the intervals between the thick courses are somewhat regular. The vertical lines are drawn from the northern edges of these courses to the base, hence the horizontal distances between the edges are indicated by the numerals in the spaces at the base, a unit of these numerals being equal to a pole, or

"mete-span" of 5 cubits, or 103.13 inches, which is $\frac{1}{100}$ of the side of the pavement square. These pole measures of the spaces are given in round numbers, and read thus from the centre: 6, 6, 5, 6, 5, 7, 4, 6, 5. With one exception, 7 and 4, this coupling of 6 and 5 in this series is in remarkable agreement with the series of 6 and 5 which we found in the Gate-Buildings of the Temple-Vision symbolizing the name of Jehova, 565. But inasmuch as that exception occurs by reason of the thirty-fifth course being placed below what would be its normal position in a perfect series of 6 and 5 there may have been a motive in the displacement, connected with the internal purposes of the construction. The following is a comparison of this series of pole measures with the series of cubit measures in the Gate-Buildings:

Pole measures to hundredths.	6.27, 5.99, 4.75, 6.05, 4.59, 7.31, 3.61, 5.68, 5.69.								
Pole measures round numbr's	6, 6, 5, 6, 5, 7, 4, 6, 5.								
Cubit meas'r's Gate-B'ldings.	6, 6, 5, 6, 5, 6, 5, 6, 5, 6.								

Two or three other courses of special thickness exist, but they do not appear to belong to the 5, 6, 5 series. On the left of Fig. 8 a like series of 5 and 6 is given, showing by reed measures in round numbers the vertical distances between the thick courses, which are given in cubit measures on the right hand. The geometrical height of the Pyramid is also shown by the symbol 565, for the height is 5,818.6 inches = 282.1 cubits, or in round numbers, one-half of 565, so that the diameter of a circle whose radius equals the height of the Pyramid is, in round number cubits, 565.

We turn lastly to see how the Altar of the Temple-Vision would stand related to the internal order of the Pyramid, provided the centres of the two structures were identical in place. Fig. 9 shows the relation. The inner circle represents the Jehovah symbol 565 (inches dia.), approximately enclosing the 20 cubit square. The outer circle is the Elohim symbol, $2 \times 1,035.14$ inches circumference. The inner square in the Jehovah circle represent the plan of Base, Settle and Altar of the Temple-Vision. The king's chamber, ante-chamber, step and grand

- | | | |
|-----|---|-----------------------|
| 7 { | By construction of squares the E. wall of King's chamber | |
| | is E. of centre | 303.4 inches, |
| 8 { | By measurement it is E. of centre | 305.0 ± 3. Petrie. |
| | Referring to Fig. 1 the N. side of the square having a per- | |
| | imeter equal to the circumference | 12960 inches is N. of |
| | centre | 1620.0 inches. |
| | The N. end of groove in wall of Gallery is N. | |
| | of centre | 1619.4 ± .8 Petrie. |

The following points may be noted :

The height of the Pyramid in cubits is one half of 565.

One hundred times the cube root of the product of the symbols 1351.4 and 565. is 9139.94.

The geometrical base of the Pyramid is 9139.87.

The square of 1-100,000th of the product of these symbols is in round numbers $76^2 = 5776$.

The apex of the Pyramid above pavement in integes is 5777.

The 1-10,000th of the product of the symbol 565 and the number of days in one year, 365, is 20.62 +

The cubit of the Temple-Vision and of the Pyramid is 20.62 + inches.

The date of the Temple-Vision appears to have been 565 years before the incarnation, about the time of the first full moon next after the autumnal equinox.

The services of the Temple-Vision are suggestively described by the prophet. We must be content with an outline of the grand processional of worshippers lifting up their voices as they stand upon each of the seven steps of the outer gateway, and each of the eight steps of the inner gateway. The songs of the steps, or Psalms of Degrees, are the 120th-134th inclusive, and are believed to have been written for use in Solomon's temple. The position of the gate-buildings in relation to the altar and the temple, as shown in Fig. 1, and the symbolistic structure of the gate-buildings as shown in Fig. 4, being borne in mind, the processional fitness of the songs of the steps will be evident.

On the first step, just in from the precincts outside of the wall, or, as it were, passing in to a place of safety—a reflection on the afflictions of the captivity—Ps. 120, "My soul hath long dwelt with them that are enemies to peace."

On the second step, looking out from the covered porch to the city rising before them—Ps. 121, "I will lift up mine eyes to the hills from whence cometh my help."

On the third step, inside the porch and in the gateway—Ps. 122, "Our feet shall stand within they gates, O Jerusalem."

On the fourth step, abreast the middle little chambers, and fairly viewing the heavens above—Ps. 123, "Unto thee lift I up mine eyes, O thou that dwellest in the heavens."

On the fifth step, a thanksgiving for deliverance—Ps. 124, "Our soul is escaped as a bird out of the snare; our help standeth in the name of the Lord."

On the sixth step, under the inner porch of the outer gateway and in full view of the court and of the temple buildings rising still higher before them—Ps. 125, "They that trust in the Lord shall be as Mount Zion which standeth fast forever."

On the seventh step or floor of the court, just inside the outer gateway and going on towards the inner gate—Ps. 126, "The Lord hath done great things for us already, whereof we rejoice."

At the first step of the inner gateway, leading to the court of sacrifice and to the temple—Ps. 127, "Except the Lord build the house, their labor is but lost that build it."

On the second step, under the porch—Ps. 128, "Blessed are all they that fear the Lord. . . . The Lord shall bless thee out of Zion."

On the third step, inside of the porch—Ps. 129, "Many a time have they fought against me from my youth up may Israel now say, . . . but the Lord hath hewn the snares of the ungodly in pieces."

On the fourth step, in the midst of the little chambers—contemplating the sacrifice—Ps. 130, "I look for the Lord, my soul doth wait for him. O Israel trust in the Lord, for with the Lord there is mercy; . . . he shall redeem Israel from all his sins."

On the fifth step, prostration of soul—Ps. 131, "Lord I am not high minded, my soul is even as a weaned child. O Israel trust in the Lord from this time forth for evermore."

On the sixth step, in the porch and in full view of the altar and temple—Ps. 132, "Arise, O Lord, into thy resting place,

thou and the ark of thy strength. Let thy priests be clothed with righteousness and thy saints sing with joyfulness—the Lord hath chosen Zion to be an habitation for himself—he hath longed for her."

On the seventh step, inside of the porch and within the inner court—Ps. 133, "Behold how good and joyful a thing it is, brethren, to dwell together in unity. Upon the hill of Zion the Lord hath promised his blessing and life for evermore."

On the eighth step, looking towards the altar and the temple—Ps. 134, "Behold now praise the Lord all ye servants of the Lord, ye that by night stand in the house of the Lord, even in the courts of the house of our God."

The following psalm, the 135th, is a grand outburst of praise at the very doors of the temple: "O praise the Lord for the Lord is gracious. O sing praises unto his name for it is lovely. Praise the Lord ye house of Israel. Praise the Lord ye house of Aaron. Praise the Lord ye house of Levi. Ye that fear the Lord, praise the Lord. Praised be the Lord out of Zion who dwelleth at Jerusalem." It is a veritable hallelujah chorus for the temple service. We can hardly imagine the grandeur and beauty of such a procession, with its rich and varied environment of symbolistic architecture. Yet, as a whole, it is as a vision of that magnificent tribute of praise to the Son of God, which is even now rising up from the heart of human life and filling the city revealed to the prophet in the visions of God, as it is written: "Behold waters issued from under the threshold of the house eastward—first ankle-deep, then knee-deep, then thigh-deep; after that swimming-deep. And the man that had the line of flax in his hand said: these waters (streams of living people, the servants of God bearing the life of God in them) issue out toward the east country and go down into the desert and go into the sea. And it shall come to pass, that everything that liveth, which moveth, whither soever the rivers shall come, shall live."

With such beautiful and impressive symbolism, traced by measure and proportion in the very streets and buildings of the "city," what might we not hope to find hid away under the cover of geometrical forms and relations? Surely the spirit of

prophecy must dwell in the prophetic vesture. The seven-fold gifts of the spirit, associated with admission into the city of God, and the courts of the house of Israel, as seven steps of escape out of the precincts of the city, are truly followed by the eight cardinal virtues or steps of approach that lead up to the altar of sacrifice. If the "city" is a vision of the city of God, even of the kingdom of the Lord Christ, then his NAME is written there by line and by measure, and his number is the number of HIS PRESENCE. All Holy Scriptures are written for our learning, that we may hear, read, mark, learn and inwardly digest them, and by patience and comfort of the holy word embrace and ever hold fast the blessed hope of everlasting life given us in our Saviour Jesus Christ.

H. G. WOOD.

THE GRAND SEAL OF THE UNITED STATES OF
AMERICA.



Amongst the many minor incidents in the history of the United States of America, there is one in particular that has of late awakened the attention of some who have been studying the rise and progress of that country, as taken in connection with the original history and descent of the British nation. I refer not only to the circumstances, whatever they may have been, that led to the adoption of the several devices that compose the two sides of the great seal of the United States, but to the very remarkable significance of those devices, and of the mottoes which the wood-cut at the top of these pages presents to our view.

Dr. Wild of New York, to whose little book, 'Manasseh and the United States,' I am indebted for the information, tells us that the items on the seal were suggested by St. John Prestwich, Bart, an Englishman, to the American Minister, John Adams, by whom they were conveyed to Congress and adopted.

I shall not now wait to enquire how such a seemingly strange association of ideas came to be represented, but proceed at once to observe that the eagle is surmounted by thirteen stars; that he bears on his breast an escutcheon on which are thirteen

stripes, and holds in his talons thirteen arrows. Next we see in the eagle's beak a scroll with the motto "*E pluribus unum*," declaring America to be "one out of many," or "from among many;" so we are led to enquire, Many what? and How many?

The second question is answered at once by the thrice repeated thirteen already noticed; and we know as a fact that the number thirteen coincides with the number of States of which the Union was composed at the time of separation. These thirteen States, however, could not be the many referred to in the motto, seeing that America, as a whole, could not be one of them, except upon the principle on which Eve has been styled "the fairest of all her daughters."

But now the idea is gaining strength that the American people are the representatives of one of the Lost Tribes, and so are inheriting the blessings promised to Manasseh, the elder son of Joseph and head of the thirteenth tribe.

Here again the coincidence becomes remarkable between the number thirteen and the number of the tribes; and it gives effect and purpose to the idea contained in the motto, declaring America to be one out of the many, that is, one of the thirteen Israelitish tribes.

Now, assuming, as I do, that the arrangement of these devices, in what way soever suggested, was not without a meaning and a purpose, this repetition of the number thirteen gives us a clue to the proper understanding of the other emblems on the seal, whilst they at the same time all unite to confirm us in the correctness of our assumption regarding the reference to the tribes of Israel.

Now, let us observe the order in which the stars are placed, namely, twelve of them representing the nominally twelve tribes, and enclosing a quadrilateral space—three on each side—thus corresponding with the manner of encampment of the Israelites during their journeying through the wilderness; and let us note the one star in the centre answering to the position of the Levites in the midst of the camp round about the tabernacle, as we read in the first chapter of Numbers, verses 50 and 53. And further, which confirms this idea, we see depicted above all the cloud which hung over the camp and accompanied

the wanderers all through the period of their weary way. (See Numbers, ix, 15-23.)

Our attention is next drawn to the attitude of the eagle, which is altogether different from that of the royal bird that finds a place upon the standards of Austria and Russia. Here the eagle is represented without any deformity and with the wings turned upward, reminding us of the eagles described in the first chapter of Ezekiel and 11th verse. And we must remember that the prophet Ezekiel is most particular in his description of all connected with the future history of the Israelitish tribes. Next, the olive branch in the right talon of the eagle, and the arrows in the left, plainly illustrate the divine command given to the Israelites, as we find it in Deuteronomy, xx, 10, 12: "When thou comest nigh unto a city to fight against it, then proclaim peace unto it, . . . and if it will make no peace with thee but will make war against thee, then thou shalt besiege it." And here we must not fail to observe that the action of the Americans in making overtures of peace to the mother country, previous to the commencement of the war of independence, was strictly in accordance with the divine precept.

But a further consideration of this olive branch awakens a new thought when we recollect that in the eleventh chapter of Revelation St. John speaks of the two witnesses as two olive trees; and some expounders of prophecy have not hesitated to point to the two houses of Israel and Judah as the witnesses there referred to. But without meaning for a moment to contest the point whether two individual witnesses may or may not also be there foreshown, there is an ample collection of texts in the Old Testament in which the tribes of the House of Israel are addressed as witnesses for God in the latter times; "Ye are my witnesses, saith the Lord, and my servants whom I have chosen." If then God's witnesses are symbolized as olive trees, and if, as I have already shown, the tribes of the House of Israel are witnesses for God, we may very clearly perceive the inference that may be drawn from the representation of a branch of the olive tree in the claw of the American Eagle.

But to return to the idea of peace and war, I should remark that the characteristic weapon of the Israelites was the bow and

arrow, and that the tribe of Manasseh is specially mentioned in 1st Chronicles, v, 18, as having excelled in the use of that weapon.

Now, before passing to the consideration of the motto, I would observe that there was amongst the Jews of old a peculiar science known as the Cabbala, one system of which, called Gematria, is described in Kitto's Encyclopædia of Biblical Literature, as the arithmetical mode of interpretation, in which the letters of a word are regarded with reference to their value as numeral signs, and a work is explained by another whose united letters produce the same sum ; and the writer gives—or rather ought to have given—his example thus.

The *two* words in the original Hebrew of Gen., xlix, 10, meaning Shiloh *shall come*, the letters of which, when considered as numerals, amount to 358, are explained to refer to Messiah, because the name Messiah being in the same way value for 358, they are both numerically equivalent.

I must explain here, for the information of some of my readers, that the letters of the Hebrew and Greek alphabets were the only characters used in those languages to express numbers, and most people are familiar with the few Roman letters representing figures which are still in use among ourselves at the present day.

To most numbers commencing at unity is attached an innate mystic meaning ; for example : The number *one* in every language expresses unity ; *two* is said to be emblematic of the incarnation—the second divine person ; *three* is a symbol of the Trinity ; *four*, a divine number ; *five* is expressive of sacred order ; *six*, secular ; and *seven*, spiritual perfection ; the latter also denoting completion, etc., etc.

I have already said that to most numbers, commencing at unity, is attached an innate mystic meaning ; and amongst those found occurring in the Scripture, no one is more remarkable than the number 153. It occurs but once in the Bible, where it is specially mentioned as the number of great fishes taken in the miraculous draught on the sea of Galilee. I am indebted for the information in the preceding paragraph to a writer in 'Our Rest' of July, 1878, Mr. H. A. Powers, who gave some

other extracts from Dr. Mahan's book in which the latter associated the number 153 with those whom I shall describe as that people, to seek and to save whom, our Lord declared he was specially sent and to whom he, on another occasion, particularly referred when he said to his disciples, "I will make you fishers of men." But he spoke more plainly when he told them he was not sent but to the lost sheep of the house of Israel. Now, after these preliminaries, if we take out the Roman numerals from the motto, *E pluribus unum*, and set down their equivalents thus, L=50, V=5, I=1, V=5, V=5, V=5, M=1000, we find the sum of the figures to be 1071, which is exactly seven times 153, or that number brought up by the seven-fold repetition, to its full or completed form. And the word *sugkleronomoi* joint heirs, (as noticed by the writer already referred to), in Rom. viii., 17, where St. Paul, addressing those called saints, says, that if we be children of God, we become joint heirs with Christ, is also value for 1071, which number seems to point to our American brethren as joint heirs with us, through Christ, to that glorious liberty to which we hope to attain upon "the manifestation of the sons of God."

Throughout the Bible the term "Sons of God" is applied to the house of Israel, and that phrase in the original Hebrew is numerically equivalent to 153.

Again, if we turn to the thirty-fourth chapter of Ezekiel and thirtieth verse, where occurs the expression, "The House of Israel, my people," we shall find that the numerical value of the corresponding Greek words, *Laos mou oikos Israel*, is just 1,530 or the number of the fishes multiplied by 10, the number of the tribes of the House of Israel. And further, to show how this number seems to attach itself to Israel, I would observe that the sum of the sums of the several figures composing the several numbers expressed by the Greek letters in the thirteen names used to denote the tribes (exclusive of Levi, which had no inheritance), and taken as they occur in the Septuagint version of the thirty-fourth chapter of Numbers, makes also 153.

$$\begin{array}{rcl} \text{Ρουβην} & = & 630 = 9 \\ \text{Γαδ} & = & 8 = 8 \end{array}$$

Μανασση	=	500 = 5
Ιουδα	=	485 = 17
Συμεων	=	1495 = 19
Βενιαμιν	=	168 = 15
Δαν	=	55 = 10
Ιωσηφ	=	1518 = 15
Εφραιμ	=	656 = 17
Ζαβουλων	=	1360 = 10
Ισσαχαρ	=	1112 = 5
Ασηρ	=	309 = 12
Νεφθαειμ	=	650 = 11

153

There is also a remarkable instance of the presence of the two numbers, 1,071 and 153, in the Hebrew of the following text taken from the fourteenth verse of the One Hundred and Forty-eighth Psalm, where we read, "He also exalteth the horn of his people, the praise of all his Saints, even of the children of Israel." The total value of the letters composing the entire of this portion of the verse in the Hebrew is 3,213, which is exactly three times 1,071, and twenty-one times 153.

I shall now take the names of the *twelve* tribes from the first chapter of Numbers, where we are given "the sum of all the congregation of the children of Israel after their families from twenty years old and upward, by their armies," and I put down the gross sum as stated in the twenty-second verse, 603,550, which is fifty times 12,071. Here we have *twelve* thousand and *seventy-one* to compare with the *ten* hundred and *seventy-one* of the former calculation, reminding us of the *numbers scaled* from each tribe, although the tribes named are not exactly the same as those mentioned in the seventh chapter of Revelation.

The number of the congregation is as follows:

Reuben.....	46,500 = 15
Simeon.....	59,300 = 17
Gad.....	45,650 = 20
Judah.....	74,600 = 17
Issachar.....	54,400 = 13
Zebulon.....	57,400 = 16
Ephraim.....	40,500 = 9

Manasseh.....	32,200 = 7
Benjamin.....	35,400 = 12
Dan.....	62,700 = 15
Asher.....	41,500 = 10
Napthali.....	53,400 = 12
	<hr/>
	603,550 163

$$603,550 \div 50 = 12,071.$$

Now, if we compute the sum of the several figures composing these numbers, as above, it will amount to 163, whilst the value of the remaining words of the 14th verse of the 148th Psalm, "a people near unto him" (עַם קָרִיב), is 978, exactly six times 163. And if we turn to Rev. xvii., 14, we may read that they that are with the Lamb, namely, the saints, are said to be "called and chosen and faithful" κλητοι καὶ ἐκλεκτοι καὶ πιστοι which words are value for 438, 31, 460, 31, 670—in all 1,630, or ten times 163. And this 163 is equivalent to 153, the number of the fishes, plus 10, the number of the tribes of the house of Israel, as distinguished from the two tribes of the house of Judah.

Out of many more examples which might be given, I shall conclude my observations on this side of the seal with one in which the number *ten* specially appears, connecting the ten servants mentioned in the parable (Luke xix, 3) with the lost tribes. The Greek of "ten servants" δεκα δουλοισι equal to $30 + 584 = 614$, which, divided by 4, produces 153.5. The fraction may suggest to the "*Half tribe*" of Manasseh a new thought on the subject of their genealogy, especially as it appears that Rebekah in the Hebrew is a value for 307, which is twice 153.5, whilst in the Greek Ρεβεκκα is exactly 153.

I shall now turn to the reverse side of the United States' seal. Here we have a pyramid, and a most remarkable representation of a pyramid it is, seeing that the top, or chief corner stone is wanting. This peculiarity, it will be perceived, makes it a true picture of the Great Pyramid of Geezeh, concerning the wonderful discoveries in which, as regards external and internal measurements, so much has been written of late years.

Now, we see represented over this incomplete pyramid a triangle, having within it an eye. And this triangle, so like that which we see used as an emblem in the higher orders of Freemasonry, is nothing more nor less than a figure of the stone required to complete this truly wonderful building. And this triangular figure may be considered as emblematic of the Deity in his great triune of one God in trinity and trinity in unity; and so it brings to our mind those words of St. Paul (Eph. ii., 20) setting forth Jesus Christ as "the chief corner stone in whom all the building fitly framed together groweth unto a holy temple in the Lord." But we can scarcely fail to observe that this three-sided figure with the all-seeing eye appears here to convey to our minds the idea of the ever watchful care of God for his people, and reminds us of the inspired words of the Psalmist, "I will instruct thee and teach thee in the way that thou shalt go; I will guide thee with mine eye." (Ps. xxxii., 8.) This triangle is surrounded by a glory, and if we take the Hebrew words אֵל כְּבוֹד יְהוָה, the glory of the Lord, as they occur in Exodus xvi, 7, we find them to represent numerically 401, 32 and 26, or a total sum of 459, which is exactly three times 153.

Let us now analyze the motto, "*Annuat captis.*" Picking out therefrom the Roman numerals and U taking the form of V, we have the letters VICI, which are value for 107, and which we cannot help observing, *en passant*, make the Latin word for "I have conquered."

The number 100 with the addition of 7 is said to represent "God's flock spiritually perfected." Finding such a significance attached to this number, it seems worthy of remark that in the 63d chapter of Isaiah and 17th verse, where we read, "Return for thy servants' sake *the tribes* of thine inheritance." The word for tribes in the original Hebrew is שְׁבִטִים, and equivalent in number to 321, which is just three times 107—the four letters (reading from right to left) standing for 300, 2, 9 and 10. And there is a corresponding passage in the Septuagint version of Isaiah xliii., 12, where the words *υμεις εμοι μαρτυρες* "ye are my witnesses,"—addressed to Israel, make in the total a multiple of 107. Thus $655 + 125 + 1,146 = 1,926$, which divided by 18 produces as follows:

$$\begin{array}{r} 6)1,926 \\ 3)321 \\ 107 \end{array}$$

Again I find in Deuteronomy vi., 4-5, where we read, "The Lord our God is one Lord, and thou shalt love the Lord thy God with all thy heart," that the value of those words in the Hebrew character is equal to 2,140, which divided by 2 produces a sum just ten times 107. Here the correspondence in regard to number appears to point to the intimate connection between God and his ten-tribed people of Israel as distinct from the house of Judah. The words are **יהוה אלהינו בבל-לבבך**

⁵³⁴ ⁵² ⁵⁴⁶ ²⁶
יהוה אלהינו יהוה אחד ואהבת את
⁴⁰¹ ⁴¹⁴ ¹³ ²⁶ ¹⁰² ²⁶ I may remark that this is a part of one of the texts written in the Jewish phylacteries or Tephyllin made to be worn on the forehead; and the portion quoted consists of ten words.

I would now draw attention to a remark of Mr. Grattan Guinness in his work, "The Approaching End of the Age," that "to the 12 of the natural Israel God has added a new 12, the final number being twice 12 or 24." He says, also, that 3 and 8 are "new creation numbers;" and you will perceive that the product of these two is also 24. Now, I shall take this 107, the value of the words "*annuit cœptis*," and multiply it by 24. It produces 2,568. Now let us write down the following three Greek terms, expressing the three persons of the Trinity, and place opposite to them the numerical values of each; they will stand thus:

<i>Kyrios</i>	.	.	.	==800	.
<i>'Ο παρακλητος</i>	.	.	.	==880	.
<i>Ίησους</i>	.	.	.	==888	.

and the same 2,568 will be their sum.

Here is a very remarkable association of figures which will itself explain why I have put the second person of the trinity in the third place, and they are reducible on a division by 8 to

100

110

111

the sum of which is 321, which, being divided by 3 produces 107—which number again appears, together with the combination 321, in the following Hebrew sentence:

In the Thirty-fifth chapter of Genesis and tenth verse are the following words **וַיִּקְרָא אֶת־שְׁמוֹ יִשְׂרָאֵל** "and he called his name Israel." 541 346 401 317

317

401

346

541

5)1,605

3)321

107

But to return to the number of the motto, *E pluribus unum*, on the obverse side of the seal, and which is equal to 1,071 (observe the recurrence of the 107 in the first three figures), if we add thereto the number of the stars, of the arrows and of the stripes, thus, $1,071 + 13 + 13 + 13$, the sum becomes 1,110, which is exactly ten times the 111, which we may consider the root of the number of the holy name Jesus; but here it is multiplied by 10, the number of the lost tribes of his people Israel, of which Manasseh is one. And this number, 111, is also the value of the Hebrew words, **בְּנֵי אֵל תִּי**, "the sons of the liv-

18 31 62

ing God," which we find directly applied to Israel in Hosea, i., 10; and the words **כֹּהֲנֵי יְהוָה** "Priests of the Lord,"

26 85

in Isaiah, lxi., 6, as applied by that prophet to the House of Israel, produce the same number, 111.

Now we shall return to the Pyramid. We find inscribed on its base the number, or rather date, 1776, which is equivalent to twice 888, that very remarkable combination of eights observable in the name of Jesus; and these eights are also resolvable into 111, which will appear as the basis or root of the full num-

ber, seeing that 1776 is equal to 16 times 111.

Let us now take the other motto, which appears under the Pyramid—"Novus ordo seclorum,"—a new era in the ages. The Roman numerals in this sentence are value for 1,665, which is exactly equal to 15 times 111. Hence, if we place 1,665 under the 1776 (that being the position they relatively occupy on the seal) and subtract we find that the difference between the two numbers is also 111.

I have already remarked that the words "Ye are my witnesses," are addressed to *Israel* by the prophet Isaiah. Now, if we take the Greek words for the "two witnesses," as they occur in Rev. xi., 3, where the words are in the dative case, *δύοι μαρτυροῖ* we find them to produce in the total (614+1,051) exactly 1665, which is the value of the motto as well as a multiple of 111.

The following two sentences in their entirety illustrate each the same thing. See Nehemiah, i., 10, "Thy servants and thy people whom thou hast redeemed by thy great power." The Hebrew is value for 586+616+501+494+530+48=2,775, which divided by 5 produces 555, which is 5 times 111. See also Psalms, xxix, 11, "The Lord will give strength unto his people; the Lord will bless his people with peace." Here the Hebrew words represent 26+77+146+1,110+26+712+401+116+938=3,552, which is 4 times 888, or 32 times 111.

This concentration of a or multiplication of a number, as it may be five times, eight times, or as now before us, thirty-two times, may be considered as an intensification of that number equivalent to the extended repetition of the figure of which such a number as 111 or 1,111 is composed.

Let us now, ere we close, take again the number 1,110 (which is the sum of the motto, *E pluribus unum*, and the three 13s representing the arrows, stars and stripes) and to it add 43, the the number of letters in the three mottoes, and we produce again the figures 153.

$$\begin{array}{r} 1,110 \\ 43 \\ \hline \end{array}$$

$$1,153$$

Our example more—(*e pluribus*) one word from Deut., xxiii.,

49 הַנֶּשֶׁר (the eagle), which is the principal emblem on the seal, and we find its value to be 555, or 111 repeated 5 times.

I shall now conclude, observing that these are very remarkable numerical coincidences or results, and I have only to ask, was the designing of the two sides of the United States seal a mere matter of chance, and are these figure facts which have been for so long pent up within the various emblems depicted on that seal, to be regarded only as the result of accident or chance? Do they not rather remind us of—and at the same time impart an intelligent meaning to—that text in the Book of Wisdom (xi., 20) in which it is said of the Almighty, "But thou hast ordered all things in measure and number and weight?" And is not this reference to number illustrated very plainly in the thirteenth chapter of Revelation, where we are expressly told that Antichrist will be known by the number of his name being six hundred three score and six? Do not such results as these rather force than lead us to reflect? Do they not, like the wonderful readings of the Great Pyramid, prove to us beyond a doubt that there is something superior to mere chance influencing, if not absolutely controlling and directing, human affairs? Do they not point us to the Bible as a mine of wealth, whether we study its pages to learn the way, the truth and the life, or examine it as a book, the very words and even letters of which declare its inspiration by the Holy Spirit, and set before our understandings the wonderful works of God?

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May, 1885.

OUGHT THE CIRCLE TO BE DIVIDED INTO 360 DEGREES?

Several correspondents of the INTERNATIONAL STANDARD have expressed disbelief that the architect of the Great Pyramids recognized the 360° measure of the circle. Their grounds of disbelief are two-fold: first, such a division cannot be accomplished geometrically; and, secondly, its use has been traced to Babylon. Hence they conclude that it is unscientific, and of profane origin, and consequently it is unworthy of a place in the Pyramid.

Now the general trisection of angles, though an unsolved problem, is not proved to be impossible. Hence the 360° division of the circle, whose construction geometrically depends upon trisection, may yet be found to be scientific. Again, the Babylonian use of 360° may not have originated in Babylon, but not improbably may have been derived from Chaldea whence also sprung the Hebrew race.

Argument by negation frequently involves so great and complex a burden of proof as to be unsatisfactory, especially when, as in this case, it is confronted by strong—may I not say irresistible?—evidence of affirmation; for I cannot see how we may ignore the evidence of the side walls of the king's chamber, upon which the 360° division of the circle is clearly written, or how we can construe that evidence into mere coincidence, when we find it woven into a harmonious system covering the entire Pyramid.

But the number 360, though it may lack geometrical advantage, certainly possesses highly practical arithmetical merit, for it has but to be multiplied by 7, which is the sacred symbolic number for completeness, and this multiplication completes the composite number 2520, which is the least common multiple of all the numbers from 1 to 10 inclusive. Hence 360 has very remarkable capacity for sub-

division, which quality seems to me to be far more important in circular measure than mere geometrical construction.

Lately my attention has been drawn to the Scripture use of the number 360 to denote in prophecy a year of years; also of 7 times 360, or 2520, to denote 'a great week' of 7 years of years. If then "He that sitteth upon the circle of the earth, and the inhabitants thereof are as grasshoppers," (Isa. xl, 22) has, by the mouths of his inspired prophets, declared the orbit of the earth, which measures the year, to be divided into 360 parts, may we not naturally infer that He has recognized, approved and inspired the use of a like division in circular measure generally?

The arguments for and against our hereditary 360° division of the circle sum up as follows:

In favor of 360° :

This division of the circle has eminent capacity for subdivision;

It accords with Scripture analogy;

It has Pyramid testimony that it was of sacred origin.

Against 360° :

Geometricians cannot construct it, and therefore it is declared unscientific, on the assumption that the unsolved trisection problem will forever remain unsolved;—

Archæologists jump to the conclusion that it originated with profane Babylonians, because it is found in the ruins of Babylon.

If this is a true balance sheet, surely the 360° circle is established. If this is not a true balance sheet will objectors please correct it?

J. H. Dow.

EVIDENCES OF IDENTIFICATION OF THE AMERICAN AND BRITISH PEOPLES WITH LOST ISRAEL. A MARVELOUS DISCOVERY!

THE AMERICANS IDENTIFIED WITH LOST MANASSEH—THE BRITISH WITH THE LOST TEN TRIBES—INCONTESTABLE, CONCLUSIVE AND UNMISTAKABLE EVIDENCES—THE DEATH BLOW TO INFIDELITY.

I do not wish to burden the mind of the reader with preliminary remarks. I am anxious to get at once into the thick of the evidences, but it is right to say, that apparently honest objections have been tendered against this identity. Though given, not one of them have supplied a vital, fatal objection; they have all been overthrown. Not one has held its ground, and I boldly and fearlessly challenge the real Bible student to produce one that could do so. To save time, I will deal with the chief of these objections in a closing appendix, and show they are all against the true interests of the Scriptures, divine morality, the truth and the church of God. They can be summed up thus: That the identity has already taken place. That the tribes have already returned. That they returned when the return from Babylon took place. That now there are no lost tribes of Israel, so none to find. That the Jews contain them all, and that in these days there is no distinction of Manasseh from Israel, or Israel from Judah in existence. The answer to these savage attacks upon the integrity of God's sure word of prophecy will be found at the close.

I shall not be understood without very specially emphasizing the distinction of Manasseh and Israel from Judah, which most certainly exists to this day, and which, without recognizing, it would be utterly impossible to understand three-fourths of the entire Bible. Thus:

THE KEY TO THE BIBLE.

THE DISTINCTION OF MANASSEH AND ISRAEL FROM JUDAH.

LOST ISRAEL.

A vast Multitude, Hos. i. 10.
 Two nations before God, Gen. xlviii. 19.
 Lost by their name being changed, Isai
 lxx. 15.
 An island nation, Isai xlii. 12.
 Their isles Northwest from Palestine, Jer.
 xxiii. 8.
 A nation with colonies, Gen. xxxv. 11.
 With the strongest army in the world, Isai
 liv. 17.
 The most powerful people on earth, Isai xli.
 8-14.
 Israel under a monarchy, Isai xlix. 23.
 King David's sceptre ruling over them, Jer.
 xxxiii. 26.
 Redeemed by Christ—a Christian people,
 Isai xlv. 17.
 The only missionary people, Isai xxxii. 6.
 Liberators of the slave trade, Isai lviii. 6.

DISPERSED JUDAH.

Few in number, Jer. xv. 7.
 No nation, only a dispersed people,
 Jer. xviii.
 Known by being specially marked, Jer.
 xlii. 26.
 Wanderers among the Gentiles, Jer. xv. 4.
 Only a personal inheritance, Jer. ix. 16.
 Without a single possession, Jer. xlii. 19.
 With no army at all, Jer. xviii. 17.
 The weakest folk on earth, Jer. xvi. 13.
 Without any form of government, Jer.
 vii. 34.
 This was taken away from Judah, Ezek.
 xxi. 26.
 Under Moses until the second coming, St.
 Luke xiii. 35.
 A new proselyting people, Isai vi. 10.
 Meted out and trodden under foot, Isai
 xviii. 7.

I give thirteen distinctions because I am writing for the people of America more particularly, and Manasseh is the thirteenth of the tribes of Israel, but I could give one hundred more.

Of course in making reference to the history of America, it becomes necessary to refer to the history of the British, the people in whom the Americans had their origin, among whom their early lot was cast, and from whom by a brilliant war, they declared their independence. I shall show, this war was necessary, that prophecies of God's word might be preserved, so permitted by the will of God. I in no way regret this war, but heartily rejoice in it, and am glad that America carried her success, because thereby we have secured many of our evidences which we should not otherwise have obtained, through which the truth of God's word has become most firmly substantiated.

As the origin of both peoples is the same, coming from a common stock, so the history of both peoples is synonymous to a certain point, and to this day both accept as truth, a Saxon or Anglo-Saxon root. This fact supplies my

Evidence No. 1.—"In Isaac shall thy seed be called."—I claim for both peoples an Israelitish descent. After the first division of this great family, though not immediately; yet it

was ultimately decreed by God, that the promises enumerated in Deut xxxviii, should be vested in Israel, and the curses named in the same chapter, vested in Judah; thus the preponderating portion of the family, consisting of eleven out of the thirteen tribes were called by God to be his chosen people, and to inherit all the blessings promised, and the section so blessed were to be called or named in Isaac. It would be impossible, God's word being true, to identify this people unless named in Isaac, no other nation upon the earth was to bear this name but this branch of the family. In Isaac shalt thy name be called, Gen. xxi. 12. The evidence that we are this blessed Israel, is of course most clearly given by our being named or called SAXONS—Saxon comes from the Hebrew "Saac," which is nothing more than Isaac, the prefix in the letter I being dropped, according to a very common custom of the Israelites to allow the introduction of an affix—in this case the *ou*, rendering it Saxon, meaning the "Son of Isaac." So that by calling ourselves Saxons, we are acknowledging ourselves to be the sons of Isaac, thus complying with scripture by being called by another name. Isai lxxv. 15. Gen. xxi. 12. Amos vii. 16. Romans ix. 7. Hebrews xi. 18.

The dictionaries derive the word Saxon from *Seaxn*, *Seaxe*, or *Seaxan*—ultimately arriving at the Anglo-Saxon root *Seax*—a short sword or dagger, and note that it was the distinctive weapon carried by the Saxons. If the makers of dictionaries were always historians they would not have fallen into this error. The short sword was not the distinctive weapon of the Saxons, they were shooters not thrusters, and short swords designated by no root sound like the above antedate by thousands of years the appearance of the Saxons on the stage of history. It is, moreover, far more probable, that if the name *Seax* is generic to this race of people, it was derived from the redoubtable name of the people themselves, who at close quarters sometimes used it terribly upon their enemies, than that, by so extravagant an inversion, it suggested to Saxons a name by which they called themselves! This idea is well expressed by John Pym Yeatman in his exhaustive work on our "Shemitic Origin," as follows: "All German writers, after their manner of putting the cart be-

fore the horse, assert that the Saxons were so called from using the Seax, so the axe, from the Axions the same people." But as shooting was distinctively the warlike property of all the Northern races, and the handling of the short sword, or dagger, strictly Southern and Latin, so to-day, these distinctions are inherited by the very descendants that inhabit these geographical divisions. The Scythians in particular, were such famous shooters of the bow and arrow, and all kinds of darts, that the very word to shoot Scythan is derived from their name. So too, the scythe was the implement of the people, though not by any means an origin of their name. Now the Saxons are, by all historians, admitted to have been the dominant family in the Scythian race, and there are weighty arguments, that would fill volumes, showing that perhaps the word Saxon is elder than Scythian and led directly to it. The sickle was the forerunner of the scythe, and shows how the K sound may be dropped, and so the general family name Scythan, may perhaps be derived from Saxon itself, in some of its infinite varieties, for the letter K. is often found changed to C. and often into X.

In the mouths of the Germans who cannot pronounce *th*, Scythian becomes Syssan, and the Netherlander calls Saxon, Saisen. But the Saxons did not go to Germany to obtain their name,—they are called Saxons and Scythians centuries before the first German was ever heard of.

With regard to the etymology of the word Saxon, Yeatman finally says :—Its history is as follows ; "The Persians used the terms Sacæ and Scythian as *convertible*, whether from a corrupt rendering of one from the other or because the Sacæ, a great tribe of Scythians bordering upon them were so called by a tribal name, (a great question which Persian scholars must determine). Of the fact of the identity of the Sacæ and the Scythians there is not the shadow of a doubt, it is clear that these people called their country Sacasena. It is equally clear that the Saxons of England were the Scythians or Celte-Scythians. Their geographical position in Europe is accurately described by Plutarch, Tacitus, Ptolemy and other authors." Finally in this argument, as the Celts are the Kelts, or Kumbri of all historians of our day and their origin Sacasena, or finally are the

Beth *Kymri*, whom Shalmaneser put in Media, as these were "the Lost Tribes" whom the Biblical historian sent out of Samaria for Baal (*Cumrium*)-worship, it follows that these Scythians as Saxons are none other than a people no longer called in Israel's name but by the elder name of Isaac as the Lord ordained. In most of the eastern languages "sons of" is written "sunnia." It is equivalent to the Scotch "Mac" and the English and German "Fitz"—MacDonald—son of Donald—Fitz Henry son of Henry. So in the distant home of our ancestors Saac-Sunnia meant sons of Saac or sons of Isaac. Stambul is formed of Istambul by the prefix I, and so the Saxon is a direct descendant of our father Isaac. Dr. W. Holt Yates accepts this derivation of the Saxon name as positive, and the Rev. W. H. Poole, D. D. says in connection with it as follows; "It is a little curious to glean from the ancient nations and from the stone monuments of the early times the various forms in which this word is to be found. I will here insert a few from a list of my own gleaned from ancient history, thus: Sons of Isaac, Sons of Saac, Saac-Sunnia, Saac-Suna, Saac-Sena, Saca-pena, Esakska, Sacae-Amysqui, Beth-Sakai, Sunnia-Sakai, Sakai-Suna, Saca-Suna, Sacae-Sunnae, Sackasina, Sachka-Sunnia, Saca-cine, Saka-Suna, Sacas-Sani, Sakas-Saeni, Saxi-Suna, Sach-Suni, Sachi, Sacha, Sakah, Saachus, Saacus, Sacho, Saxo, Saxoi, Saxonia, Saxones, Saxae, Sach-sen, Sacksen, Saxe-sen, Saxone, Saxony, Saxon.

From the *Asiatic Researches*, Dr. Moore quoted in his work, "*The Saxons of the East and of the West*: We are interested to learn that the White Island in the west (England) was in India denominated *Sacana*, from the *Sacas*, or *Sacs*, who conquered that island and settled there at a very early period, from the fact being mentioned in the *Pur'an's* named *Varada* and *Matsya*.

Upon the northern slope of the mountains of Israel, overlooking Damascus, lay the ancient cities of Bashan, and there Ptolemy, called "*Saccaca*," a very old town of the giants which Rev. S. Porter in his "*Giant Cities of Bashan*" found named Shuka. This traces the word *Saccaca* directly back to the very home where Israel, now Saxons, lived before captivity, and an

examination of an ancient map of Palestine will show at a point south of the Sea of Gallilee, a city named *Scythopolis*. This is but another, but most significant, name for *Bashan*, where these *Sacaea* dwelt, and just south of it is *Succoth*, a name as prominent in Scottish history as Saxon and Scythian is in that of all the early settlers of Albion. Strabo says the most ancient Greek historians called the people who lived beyond the Caspian Sea *Sacaea*. Diodorus says "The *Sacaeae* sprung from a people in Media who obtained a vast and glorious empire." Ptolemy derives the Saxons from the *Sakai*, a Scythian race who came from Media. Pliny says, "The *Sakai* were among the most distinguished people of Scythia, who settled in Armenia, and were called *Saeca-Sani*." Albinus says, "The Saxons were descended from the ancient *Sacae* of Asia." Æschylus remarks that "the *Sacae* were noted for good laws, and were preeminently a righteous people." Prideaux finds the *Cimbrians* driven out by the *Asaea*, who came from between the Euxine and Black Seas, and says that from them came the *Angli*, who with the Saxons conquered England. Upon the marbles of Nineveh we read that a people called *Esak-Sha* rebelled against Assyria about 670 B. C. *i. e.* fifty years after the captivity of Israel. Upon the famous *Behistan* rock Darius placed the history of "*Iskunka*," the chief of the *Sacae*, who rebelled against him. Sharon Turner says, "The Saxons were a Scythian nation, and were called *Saca*, *Sachi*, *Saki*, *Sack-sen*."

When Darius invaded Scythia and demanded earth and water as tokens of submission, the answer of our Saxon ancestors was sent back in the form of a most significant present. They sent him a bird, a mouse, a frog, and a bundle of arrows. It meant, "Fly into the air like a bird, hide in the earth like a mouse, or dive into the water like frogs, lest our arrows prove your doom. Worn out and struck with this eloquent message, the army of Darius retreated. This message had an Israelitish and a British flavor, and as an early expression of the "Monroe doctrine" was doubtless suggested by some of the descendants of ever warlike Ephraim and Manasseh.

Finally, upon the head of *Iskunka*, the Saxon, as portrayed

upon the Behestan rock 500 years *before* Christ, is an exact representation of a Greek cross. Upon the obverse of a penny of Alfred the Great, 1,000 years old, occurs its perfect counterpart, and Palgrave, in his history of the Anglo-Saxons, gives a drawing of a Runic ring at least as old as 200 years after Christ, bearing a similar device. May not this *pre-Christian* cross have been an emblem of the peculiar blessing ceremony of Ephraim and Manasseh, at which their father Israel so significantly crossed his arms above them? For it is in *that sign* that they have conquered most, and from it have derived a *newer* name than even Saxons. It was under their generic name of Saxons—thus in Isaac's name—that Israel was actually "called" to Christianity, and when we consider that Isaac was, of all the patriarchs, preeminently the type of him who, later on in Israel's history, was actually offered up, we see additional cause for astonishment in the fastening of this name upon the lost tribes, unto whom alone the Redeemer expressly states he was, in his earliest mission, sent.

In all study of truth one finds reflection answering back from every side, and so in the various derivations of the general family name "Saxon," each one looks backward at lost Israel, yet onward to God's people. For instance, some have with most interesting arguments derived the name "Saxon" from the Latin word *Saxum*—"a stone," and regarded it as given to them by the Romans, because they were skillful slingers. It is needless to say that this derivation cannot be correct, for the race was named so long before the Latin language had crystallized enough to compass it. It is moreover doubtful if the *Sacasena* were ever known to Rome as such dreaded slingers much before the fall of the pagan empire, and its overflow by streams of Goths and Huns, and Vandals. Yet there is a rhythm in this derivation that is most appropriate. It is just at this later time that the then fully dominant Latin language made the final alteration in the etymology of the word, from its ancient "Isaac sunnia" form to its present Saxon one, which certainly is the result of Latin use and impress. Let us therefore examine it in the light of what the prophecies then had in store for Rome from out of Israel. Rome was the last of the four

great empires that in the dream of Nebuchadnezzar formed the image of Gentile sway. They all arose together, as the chart of history will show, "but in the days of these kings," says Daniel, in his translation of it for the king, shall the God of heaven set up a kingdom which shall never be destroyed." This was "Israel" then at that moment, 580 B. C., escaped from Media, and on her progress westward, and in due time to come across the flank of the Roman empire. In the king's vision he had seen until behold a stone had been cut out without hands which smote the image on his feet (Rome in her decay) and broke them to pieces. And after the pounding into dust the whole fallen image, the king's vision had been astounded at the growth of this little stone into a great mountain till it actually filled the very earth itself. It is a part of the irony of fate—kismet—that has ever followed Rome, that when she puts her seal upon history she never fails to do so in a manner that condemns herself, and acknowledges the God of Heaven. This is well known to those who are familiar with her history, and its minute correspondence with God's prophecies about her. Hence, if to the Romans of those days, when they first began to feel the presence of "the fifth empire," as it swept across their north to its appointed place in the little stone cut out of Europe, if to Romans of those days the name of Saxon did imply a derivation from the root Saxum, (a stone) they did but bear a tacit testimony for Israel, for it was to her, and to her sons—Saxons—sons of the stone kingdom, to whom God himself who led them by her, forced a recognition so significant. These Saxons were then pouring westward to unite with David's throne. For when Nebuchadnezzar dreamed and David stood before him, the Almighty had already set the throne of him who slew Goliath with a stone upon the islands of the west, and with its transfer thither had removed its actual seat, Bethel, the witness between God and Jacob in the coronation stone of Israel to the land of which it is pledge of God's protection still.

Evidence No. 2. — "The Saxons traced to Media."—This historical research is important, because it proves that the Saxons came from the very region where Israel was carried into captivity. Sharon Turner in his valuable work, the "Anglo-Sax-

ons" (vol. 1 page 93-102.) speaking of the great waves of emigration from Asia into Europe says: "It is peculiarly interesting to us, because from these branches not only our own immediate ancestors, but also those of the most celebrated nations of modern Europe, have unquestionably descended. The Anglo-Saxons, Lowland Scotch, Normans, Danes, Belgians, Lombards and Franks, have all sprung from that great fountain of the human race, which we have distinguished by the terms Scythian, German or Gothic." Herodotus says: "The first scenes of their civil existence, and of their progressive power, were in Asia, to the east of the Araxes. Here they multiplied and extended their territorial limits for some centuries, unknown to Europe." Diodorus says: "That the Scythians, formerly inconsiderable and few, possessed a narrow region on the Araxes; but, by degrees, they became more powerful in numbers and in courage. They extended their boundaries on all sides; till, at last, they raised their nation to great empire and glory. In the course of time they subdued many nations between the Caspian and Mæotis, and beyond the Tanais. In the time of Herodotus, they had gained an important footing in Europe, and had taken a westerly direction." Sharon Turner speaking of the Saxons as a Scythian Tribe, says. "Of the various Scythian nations which have been recorded, the Sakai, or Sacae, are the people from whom the descent of the Saxons may be inferred, with the least violation of probability. They defeated Cyrus, and reached the Cappadoces on the Euxine. That some of the divisions of the people were really called Sakasuna is obvious from Pliny; for he says that the Sakai, who settled in Armenia, were named Sacassani, which is but Saka-Suna, spelt by a person who was unacquainted with the meaning of the combined words. It is also important to remark, that Ptolemy mentions a Scythian people sprung from the Sakai by the name of Saxones."

Of course these extracts become invaluable, because enabling us to call to our aid, the great standard Classic Historians who most undeniably prove for us that our own forefathers came from Media, the very district where the tribes of Israel, called in Isaac, were carried captive, and traced to that region bearing this identical name. It is enough to remind the reader, that

Manassites, as the great ancestors of the American people were there, because both the halves of this tribe were carried into captivity to this very district.

The Rev. T. Thomson says: "The term 'Saxon' was certainly applied in a very general sense to tribes who were separate, though they had sprung from the same stock at no very distant period." This is not to be wondered at, because it was an institution of the Israelites to keep their different tribes bordering to each other, yet entirely separated, being forbidden even to intermarry in the tribeships, and the custom would be preserved in these days, because long afterwards, the Apostles found them high in dispute about their genealogies, showing that their customs had been preserved. Strabo says of these Saxones that "the Sacae got possession of the most fertile part of Armenia, and though a wandering colony of Nomades, they were an eminently righteous people." Goldsmith says: "The Saxons were a brave people, who for strength and valour were formidable to all the German nations around them, and were supposed to be more than a match for the gods themselves. They considered each other as 'brethren and equals' thus following the teaching of Moses." Ye children of Israel shall not rule one over another with rigor (Lev. xxv. 46). They permitted every wayfarer to pluck as he went along, three fruits from a tree, or three sheaves from a field, or three fish from a pond, whence came the saying "three are free," and Tacitus says: "No nation was ever more liberal and abounding in social feasts and deeds of hospitality. "We must be thankful for the aid of Homer, Strabo, Herodotus, Diodorus, Pliny, Ptolemy, Tacitus, Josephus, Goldsmith and others for proofs.

Evidence No. 3.—"Media not their birthplace." Of course the historical search after lost Israel receives conclusive evidence by finding our people named in Israel because no other nation upon the earth but that of lost Israel was to be so named. Again this conclusive evidence is intensified in the fact of our people by indisputable authorities, being traced by the thread of history to the very district where lost Israel was carried into captivity, and the two grand evidences becomes materially added to and most substantially confirmed by the

clear discovery of this important fact that this district of Media was not the original homestead, birthplace or cradle of these Saxons, our veritable forefathers. This discovery is an invaluable link in the chain of evidence. Palestine was the adopted home of the Israelites, and of course when they were carried captive into Media they were away from this home. Therefore Media could not have been their cradle. So that by tracing our forefathers into Media and then most surely finding out that this was their cradle, that as a people they had been imported from some outlying region into that country, we gain a very important point. Direct testimony to this effect is given by Homer, Strabo and Herodotus. This latter historian tells that these Saxons, the forefathers of the great British and American peoples, first made their appearance in Media about the seventh century before Christ. Strabo the historian gives the same testimony, but Homer states that it was in the eighth century B. C., the two statements making very little difference, but valuable because allowing us to strike the mean resulting in the fact that it was between the seventh and eighth centuries before Christ; bringing out the remarkable fact that lost Israel was carried into Assyrian captivity 721 B. C., *i. e.*, between the seventh and eighth centuries B. C., the time when they first made their appearance in Media, which is the identical time when our great forefathers were traced to this identical neighborhood. Really it might well be asked what greater evidence could we want to prove that our Saxons and lost Israel are identical with each other?

Evidence, No. 4.—"Dan found in Ireland B. C. 721."—In the many historical evidences of the identity of the American and British peoples with lost Israel, perhaps none is so consummate as that of being able to trace by the pages of history, the tribe of Dan to Ireland. The world has never contained two tribes of Dan at any time. When Israel went into Palestine under Joshua, too great a portion of the land was given to the tribe of Judah, to the detriment of some of the other tribes. Jos. xix. 9. This necessitated Judah to give up much territory originally assigned to her, and Simeon, Dan and other tribes were thus provided for. The portions given to Dan and Simeon were

on the coast, west of Judah, and were overlapped by the portion given to Benjamin. This afterwards served as a great protection to Dan, because when the revolt of the tribes took place, and the existence of two distinct kingdoms was established, Dan's portion was within the boundary originally allotted to Judah, so to make war with Dan, would have involved making an inroad through the kingdom of Judah, which would have meant war with both kingdoms, this was Dan's protection. True, Dan's portion was small for the tribe, so we read: "The coast of the children of Dan went out *too little* for them, therefore the children of Dan went out to fight against Leshem, and took it, and smote it with the edge of the sword, and possessed it, and dwelt therein and called Leshem, Dan, after the name of Dan their father." Jos. xix. 47. This was a small possession in the north of Palestine; whereas the main tribeship was in the south, and this division instructs upon two important points, showing Dan had a custom of altering the name of a conquered district, and "placing its own name thereon instead, and also that as a tribeship it would have been very difficult for the King of Assyria to get at, because to try, would not only have implied warfare with the kingdom of Israel, but with the kingdom of Judah, with whom he was at peace. This in conjunction with the fact that Dan had a coast portion, and were renowned shipmen throughout Israel, would have given to Dan every desired facility to escape. They were down south, surrounded by Judah, had the coast, had the ships, and had most valliant shipmen, and escape they did, there can be no doubt of this. History declares this fact. It is unmistakably written upon the Irish page of British history. By consulting Keatinge's 'History of Ireland,' also 'The Annals of Ireland,' by the four masters, also Dr. Warner's 'History of Ireland,' will be found, that the tribe of Dan settled in the north of Ireland under the name of the Tuatha de Dannans, for Tuatha is Irish for "a tribe," and this tribe was Dan's. Not only do these authorities declare this, but also state, as in Cox's *Hibernia Anglicana* that the very year of the arrival of the tribe of Dan into Ireland, was B. C., 721. This was the very year of the Assyrian captivity, proving that Dan

did escape, as he could so easily have done, and also have taken Simeon under his protection, for all the tribes did not go into captivity. We read in the scripture that some did escape, Isai. lxvi. 19., and these very escaped ones were directed by God, to Tarshish, which is recognized as the British Isles or "The Isles afar off," *ibid.* These very "isles" were to become the common meeting ground of all the other tribes. It was here that Dan renewed his old custom of altering the names of places to affix his own. (Judges, xviii. 12.) In Ptolemy's map of Ireland, we find Dan's-Lough, Dan-Sowar, Dan-Sobairse, Dan's resting place, Dan's habitation, and Dan-gan castle (the birth place of the Duke of Wellington,) indeed Dan's mark is still to be found in many parts of North Ireland. But then there were the small body of Dan's colonists who in the north of Palestine altered the name of Leshem into Dan, These did not escape, they were too well advanced in the teeth of the enemy, and they went into captivity, to eventually find their way, by slow progress along the northwest passage into Europe, and to the Isles, through Denmark, or Dan's Mark, and becoming known to us as Danes; their marks are also left behind them in the Dan-ube, the Dan-iester, the Dan-au, the Dan-inn, Dan-tzig, Dan-enbury, Dan-etze, the Dan-aster, the Dan-dari, the Dan-er, the Don, the Dacia, the Davi, the Be-davi, the Betavia, the sea of Moses, and the country of Moses, or Morcia, the Dan-ric Alps, etc., etc., etc.

We protest against the idea of striving to build up a theory we are with great simplicity simply stringing a narration of facts. The identity, as stated so far, is too complete, too cumulative, ever to allow its being a theory, and these new touches merely become corroborators of Scripture, they throw jets of beauty lights upon the word of God, they give tone and force to Bible narrative.

It is nothing more than the overtures of history gracefully walking into companionship with God's holy word, showing how prophecies have been fulfilled giving to our peoples the grand position of explaining, illustrating, harmonizing and living out the divine programme in the consecutive order of events in the veritable histories of our two nations.

Then we trace Dan into Ireland and the British Isles, which

at once become the meet of the tribes, because by tracing one tribe, the pioneer tribe, we virtually trace the whole. It is Christ that describes lost Israel under the characteristics of sheep. It was He that said: "I am not sent but unto the lost Sheep of the House of Israel." Matt. xv., 24. It was He that instructed: "Go not into the way of the Gentiles, and into any city of the Samaritans enter ye not; but go rather to the lost Sheep of the House of Israel." S. Matt. x., 6. What is a great characteristic of sheep? Do we want to turn a flock into some rich pasture land? It is enough to drive one, only one, through the gateway and all the rest will follow. Do we want to drive them into a slaughter house? It is enough to drive one through the doorway and all will follow. God willed that His chosen sheep should find new pastures "in the isles afar off," should there renew their strength, reunite with each other; the whole becoming once more banded together as "a nation. Jer. xxxi., 36. And it shall be seen that it was enough to pioneer the tribe of Dan into the British Isles, where all the other tribes would follow, prophecy thus becoming fulfilled and scripture beautifully explained.

Evidence No. 5.—"Canaanites settled in South of Ireland." Lost Israel could not be traced without the testimony of history. They are people of many parts, designed by God to accomplish many works. Each branch of their work is the conception of a prophecy. All prophecy is sure; therefore all their allotted work must have accomplishment. Prophecy to be fulfilled must tell its tale through history. The identification of lost Israel means an overwhelming evidence of history. The whole testimony is history. We cannot divine the fulfillment of one prophecy without a record on a page of history. It is this that makes the identification so sure. There is no speculation; the whole thing is worked out mathematically correct, with the severe requirements of a geometrical problem. It is so with the identity of Israel. To find Israel you have to find a people complying to all the prophecies of scripture given to Israel to respond to. Not one must be lacking. The Americans and British being lost Israel, it is required that every event and circumstance predicted to surround Israel when in exile, should

surround these. If one prediction is not fulfilled in them required to have been accomplished by this time, there would most certainly be a flaw in the identity, and it would be untrustworthy. We rejoice to know that there is no such flaw, to wit: This identity could not be proved unless both Britons and Americans were troubled by the Canaanites. This is a *sine qua non*. All scripture must be fulfilled or there would be something wrong about the scriptures, which is simply impossible. God instructed Israel through Moses that when they entered the land of Canaan they were to make no covenant with the Canaanites nor to show mercy unto them, Deut. vii. 2. They were to be driven out of the land. He instructed Israel thus: "Ye shall destroy their altars and break down their images and cut down their altars, and burn their graven images with fire," verse 5. God promised if they obeyed these commands he would come to their help and expel the Canaanites from before Israel and drive them out of their sight. That Israel should possess their land, "as the Lord your God has promised unto you," Jos. xxiii. 5. Disobedience to these commands would meet with God's displeasure if not obeyed. Then "know for a certainty that the Lord your God will no more drive out any of these nations from before you, but they shall be snares and traps unto you and scourges in your sides, and thorns in your eyes," Jos. xxiii. "But if ye will not drive out the inhabitants of the land from before you, then it shall come to pass that those which ye let remain of them shall be pricks in your eyes and thorns in your sides, and shall vex you in the land wherein ye dwell," Numbers xxxiii. 55. Scripture history testifies that Israel did disobey. That they did not comply with their instructions. That God did call them to account and through His angel reminded them of what He had commanded them, saying: "That ye shall make no league with the inhabitants of the land. Ye shall throw down their altars; but ye have not obeyed My voice. Why have ye done this? Wherefore I also said. I will not drive them out from before you, but they shall be as thorns in your sides, and their gods shall be a snare unto you. Israel well understood the effect of

this verdict as launching them into overwhelming trouble, because we are told in the next verse: "And it came to pass when the angel of the Lord spake these words unto all the children of Israel, that the people lifted up their voice and wept," Judges ii. 2-4. Then scriptures prove that the after life of Israel and specially so when they reached the time of their exile, would be a life well seasoned with trouble from these Canaanites; and in order to bring forth proper evidence to the truth of the identity of the British and Americans with lost Israel, it is needful to show that both these people are troubled by them. For these proofs we are indebted to Irish history. It must be said that when Israel went into the land under Joshua, they commenced the work of driving out the Canaanites in right earnest. To some extent Israel succeeded in the driving out work. Joshua x. 40-43. The early chapters of Joshua narrate many victories, but to a large extent did not succeed. Judah could not drive out the Jebusites. Joshua xv. 63. Ephraim could not drive out the Canaanites. Joshua xvi. 10. Manasseh could not drive out the Canaanites. Joshua xvii. 12. Judah did not drive out the valley people, Judges i. 19. Benjamin could not, verse 21. Zebulun could not, verse 30. Asher could not, verse 32. Napthali could not, verse 33. Dan could not, verse 34.

The Canaanites, who were driven out when Israel first settled in the land are traced by history through Spain into the southern part of Ireland. Along their journey they cut out an inscription on a huge rock: "We are 'Canaanites, who have fled from Joshua, the son of Nun, the robber.'" In the process of time, when Israel was carried into the Assyrian captivity and the land became depopulated, the remainder of the Canaanites disappeared; and they too are traced to south Ireland. The Canaanites were Phœnecians. They had long known the existence of the British isles. In the early days of David and Solomon, they are known to have traded along the Cornish coast. In fact Cornwall was in large part peopled by them, while the main body was located in the south of Ireland, called by them "Ibernae," the farthest off land. This district was also known to them by the Phœnecian word "Yarish," or the land

of the sun setting, America being unknown to them in these days. It was also called Earsland, or Ireland, *Yarish* meaning Irish. The very ethnology of the people claims for them Canaanitish descent. The Irish language is identical with the old Phœnician. The alphabets of each are identical; each containing sixteen letters, every letter being identical. It is the same in grammatical construction and idiomatic texture. The only present variation is the introduction of one new letter, the letter P. This letter is not found in the old Phœnician. To produce its sound three letters were always employed; therefore P was introduced as a modern convenience, easy to appreciate. It is from Phœnician that the well-known term "Fenian" is derived, opening up to us a volume of meaning. Whoever uses this word in these days without associating it with a race of troubles and with dynamite? By it our train of thought is at once carried to the diabolical destruction of public buildings to the fiendish aim at human life, and the cowardly spilling of innocent blood. But why ornate description? The root of the matter is better explained in the Scripture. language of "Thorns in the sides," or "Pricks in the eyes." The very brutality creating an evidence to our identity with Israel, and instructively showing that literal prophecy is indeed vested with literal meanings. Then away with the dishonesty of spiritualising away the "more sure word of prophecy." This treachery of the pulpit has never helped the noble and God given work of conversion. To insult our intelligence is not the way to win souls for Christ. To attempt the cant of making out that God does not mean, the meanings of the words he employs, is to belie the Bible, to hide the truth, to commit iniquity. Saxon! "Arise! Shine, for thy light has come." Protest against this liberty taken on the part of our preachers with our Holy Scriptures. God does mean what he says. His words are plain; are now proved historically true by hundreds of plain evidences. Therefore set yourself against the crime of spiritualizing away the real meaning of literal prophecies. Be no longer deceived. Stamp out the vulgar deceit palmed upon you by public teachers in their claim that the prophecies of the Bible can only be understood by their interpretations. This

is pure priestcraft, an abominable delusion ; and the sooner the deception is banished from our midst, the easier will be the work of saving souls for our Lord.

EDWIN HINE.

"THE TWO WITNESSES."

A CRITICISM BY WM. H. SEARLES.

This is the title of a pamphlet prepared by Mr. R. Courtenay, of Bombay, in which he attempts to confirm the theory proposed by Mr. Robert Menzies, and adopted by several other writers. The theory regards the Grand Gallery of the Great Pyramid as a historical or prophetic chamber, beginning at the north end with the beginning of the Christian era, and measuring thence one pyramid inch for each year onward.

As this method of reckoning brings us to the face of the great step, near the south end of the gallery about the time of the battle of Waterloo, Mr. Courtenay, with true British patriotism, assumes this event to be indicated by the step, and uses it as an origin from which to reckon other dates in history and other points in the chamber. The entire force of the argument depends on the numerical coincidences which he can establish between years and inches. The object of the present paper is to examine into the merit of these coincidences. As the author has selected the west side of the chamber for his comparisons, we will confine our attention to this side.

Starting, then, from the date of the battle of Waterloo, June 18, 1815, the first historical event to which our author refers is the birth of our Lord, which he thinks is indicated by the north wall or beginning point of the Grand Gallery. He calculates the distance along the sloping floor from the step to the north wall as 1814.161616 pyramid inches, and translating inches into years, he derives the interval of 1814 years, 59.03 days, which deducted from the date of Waterloo, places the Nativity at the date of April 20th, A. D. 1. (He does not give the hour and minute, as he might have done if his decimals are to be de-

pended on.) But how does he obtain the exact number, 1814.161616? He tells us, from the "true vertical height of the foot of the step above the entrance of the gallery, viz., 803.802745, and the true angle of inclination, viz., $26^{\circ}, 18', 0''$." But how does he ascertain the height, 803.802745? By dividing the number 2480.408235 by 3 and subtracting 23 from the quotient. Now what the number 2480.408235 is he does not tell us exactly, except that it is nearly like 2480.56942, "which is the number of days in seven lunar years." Or we may obtain the height, as he shows, by subtracting the face of the step, 36.197255, from the height to the top of the step from the beginning, which he calls 840.

Now the number 36.197255 is obtained by taking 29.5305885, "the exact number of days in a lunar month," and adding 6.666666, the last number being the difference of 840 and 833.333333, and the last being $2\frac{5}{8}$. The 2500 is a purely arbitrary number.

Reducing the above process to a formula, we have:

$$\begin{aligned} 803.892745 &= 840 - (29.5305885 + 840 - 2\frac{5}{8}) \\ &= 2\frac{5}{8} - 29.5305885 \end{aligned}$$

and

$$1814.161616 = 803.802745 \div \sin. 26^{\circ}, 18'.$$

So the length is obtained from purely arbitrary sources after considerable calculation. For our part we prefer to go directly to the best authorities who have actually measured the length, and compare their results.

The distance, then, from the step to the north end of the gallery is as follows:

West side, according to Piazza Smyth (L. & W., p.

77, vol. 2)..... 1815.6

Total length of gallery.....1883.00

Less the slope length of step68.04

leaves for the distance from step to N. end.....1814.96

There is a discrepancy here of..... 0.64

But adopting 1815.6 and deducting $\frac{1}{10}$ of 1 per cent. to

reduce to Pyramid inches, we get.....1813.88P

Flinders Petrie gives on the east side.....1815.50

And for the whole length of gallery.....1883.60
 Deducting slope length of step 68.40
 Leaves (with a discrepancy of 0.3).....1815.20

Smyth makes the west side 1.70 greater than the east side. If we add 1.70 to Petrie's east side, we get

1815.50 + 1.70.....1817.20
 And deducting 1.82, leaves.1815.38P

It is hardly fair to average this result with the former, as Petrie did not measure the west side, so we have 1813.88P instead of 1814.16+ of our author for the distance from the step to the north end measured on the slope. But this represents 1813 years, 321 days, which taken from June 18, 1815, brings us to August 1, A. D. 1., instead of April 20th of that year. In other words, the difference between 1814.16 + and 1813.88 is 0.28 inches, or 103 days. We thus see how a small discrepancy in the measurements makes a wide variation in the dates, and this should warn us to seek the measures from given dates rather than to determine exact dates from the best of measurements.

As the date of the Nativity is veiled in uncertainty we cannot prove by it whether the date of Waterloo is correctly taken at the step or not; we therefore pass to the consideration of the next event, the crucifixion of our Lord. The author argues that this took place precisely 33 years to a day after the Nativity, and that it is symbolized by the opening in the west ramp, the center of which he is misled by other writers into calling 33 inches distant from the north end of the gallery. Now Smyth states distinctly, that the *horizontal* distance from the north wall to the two sides of the opening are respectively 21.3 and 49.3, and that the distance to the center of the well is 35.3 inches. Also that the distances from the north wall measured *on the slope* of the gallery are 25.5 and 54.3, and to the center 38.4 inches. Mr. Petrie confirms these measures substantially. So that if the north wall symbolizes the Nativity the center of the well symbolizes some event that occurred 38.4 years thereafter, and not the crucifixion. Mr. Petrie says of this opening, "it appears to be so rough and so evidently utilitarian (for the exit of work-

men,) that it is not worth while to publish more complete measures than those of Prof. Smyth."

The author next invites our attention to the eighteenth centenary of the martyrdom of St. Peter, which was celebrated in Rome, June 29th, 1867, or 52 years 11 days after Waterloo. This calls for a measurement of 52.03 inches from the step southward, which the author claims is the distance along the floor line produced from the foot of the step to the level of the ramp. Now the height of the ramp, west side, at the step is 23.62 according to Petrie p. 75 (mean of two good measures) or 23.6 P., and this divided by the sine of the angle of the floor, which is $26^{\circ} 17' 40''$ according to Smyth's elaborate observations gives us 53.27 inches, or an inch and a quarter larger than the 52.03 required, thus indicating a time of 15 months after the centenary occasion. Moreover the point now reached is an imaginary one in the heart of the great step, and cannot have any symbolic signification whatever. Even if the measurement had proved correct, to tally with the date, it would not have proved the propriety of fixing the date of Waterloo at the great step, because the point reached is in no sense a mark left by the builder of the Pyramid.

Now, most unfortunately, the author uses this point, and and date of June 29th, 1867, to reckon back from for several centuries, to the anointing of Charlemagne, December 28, A. D., 800. He does not claim that there is any mark in the gallery to indicate this event, and it proves nothing in relation to Waterloo.

The author next goes into several pages of calculation to find that a plumb line dropped from the south end of the ceiling would touch the step at a distance of 55.08393 inches south from the face of the step. This translated into years and added to the date of Waterloo brings him to July 18th, 1870, the day on which the infallibility of the Pope was proclaimed at Rome. Now this might seem significant were it not for the fact that Petrie's actual plumb line struck the step 21.25 north of the south wall by actual measurement or $(61.52 - 21.25) = 40.27$ inches, or 40.23 P., inches from the face of the step. This gives us a date more than 15 years prior to the proclamation of

infallibility, consequently this event proves nothing as to the correctness of the "Waterloo theory."

The author now undertakes prophecy, and supposing the floor line to be produced southward till it emerges at the top of the step he makes the date at the point of emergence, Feb. 27th, 1897, which he predicts will be the time when the "Times of the Gentiles" shall be fulfilled. This may be so, but at the present date it proves nothing about Waterloo, and the step. We remark in passing, however, that from June 18th, 1815, to Feb. 27th, 1897, is 81 years 254 days the equivalent of 81.696 P. inches, while the distance through the stone along the line of the floor produced is $(35.8 + \sin 26^\circ 17' 40'') = 80.815$ P. inches. 35.8 is the height of step, as Mr. Petrie found by two careful measures on the west side. Prof. Smyth, however, quotes 36.2 inches = 36.19 P. inches at the same place, which would give a result much nearer Mr. Courtenay's figure. The point of emergence is another imaginary point, to be found by calculation only, and although it lies on the floor of the passage leading to antechamber, there is nothing to mark the spot, so far as we are informed. The visitor would never remark it as a monument or prediction of anything.

The author here takes leave of the Pyramid and we need not follow him further, except to say that he uses the date of Feb. 27, 1897, to reckon back from; thus deducting the 1,260 years mentioned in Daniel gives the year A. D. 637 in which Jerusalem was taken by Omar; and deducting twice 1,260 or 2,520 years gives the year 624 B. C., the date of the fall of Assyria and the rise of Babylon. It is not claimed that these events have any symbol in the Pyramid, hence its prophetic character is not established by them.

In conclusion, we regret that so much labor as the author has evidently bestowed on this subject should prove fruitless; for it seems to leave the theory, which is certainly a fascinating one, no better confirmed than before.

The only satisfactory method of solving such a riddle, if it be capable of solution, is to prepare a schedule of all prominent marks in the gallery with their distances, also a schedule of important events in history with their dates and then compare the

two without alteration on different theories as to the starting point, until a theory can be found that will reconcile one schedule with the other.

ABSTRACT OF A PAPER READ BEFORE THE
AMERICAN ORIENTAL SOCIETY.

At the last meeting of the American Oriental Society (May 6), a paper from Mr. Cope Whitehouse was read, which explains Genesis xlix. as referring to those parts of the Heptanomis which the Egyptian Jews believed to have been occupied by the descendants of the twelve patriarchs at the time of the Exodus. He is strongly opposed to the theory of pyramid metrology, and this evidence therefore has all the weight which attaches to the admission of an opponent reluctantly confirming opinions with which he has no sympathy. The great difficulty with which the Pyramid Metrologists have been obliged to contend lay in the separation of the pyramid from the land of Goshen. In "Christian Thought," however, Mr. Cope Whitehouse had shown that there was no agreement among scholars as to the part of Lower Egypt occupied by the children of Israel. The most distinguished scholars flatly contradict each other. Micæhlis and Rosenmüller put it beyond the Suez canal to the east. Mr. Poole and Mr. Naville make it the valley of the Fresh Water canal. Professor Paine and Canon Rawlinson suppose it to be near San el Hagar. The Dean of Canterbury and Dr. Ebers bring it as far south as Heliopolis or Cairo. But Jablonski, a very learned German Egyptologist of the last century, in a posthumous treatise, "De Terra Gosen," declared that "from all time, it had been believed in Egypt that Goshen was the fertile province of the Fayoum to the south-west of Cairo, including a strip of the Heracleopolite Nome." This is precisely the region marked by pyramids. It is "in the midst of Egypt" where Joseph's body was placed, where the Israelites dwelt. The Ishmaelites are descendents of Abraham. They

would preserve in Arabia the same traditions as the Jews in Palestine. The wandering in the wilderness and the battles with the Amorites would be events which would leave permanent records in their history. When these Arabs conquered Egypt in the Seventh century, they would naturally restore the old Semitic names and substitute them for the Greek. The four provinces of middle Egypt are Gizeh, Beni-Suef, el Fayoum and Minieh. The Bahr Jusuf or Canal of the Patriarch Joseph, which the Encyclopedia Britannica says was called after Saladin, although it is mentioned by that name centuries before Saladin was born, starts from *Siut*-Lycopolis, and empties into the Birket el Qeroun. The pyramids are all in, at, or near this region, between the canal of Joseph and the neck of the delta.

In this paper it is suggested that the blessing of Jacob refers to "the latter days" in Egypt, while the blessing of Moses (Deut. xxxiii) describes the prosperity in Palestine. The imagery, under which Benjamin is represented as a wolf, Joseph as a branch, Judah as a lion are the heraldic emblems subsequently adopted by the polytheistic Egyptians. The Hyk-Sos or lords of *ta-She*, the Fayoum, were the allies "the shepherd, the stone (or support) of Israel." The children of Jacob were admitted into the island-fortress protected by "the arms" of Joseph, and the "deep" lake Moeris, which lay under the everlasting hills. But it was Joseph who had aided Pharaoh to accomplish this great work. It was he who redeemed el-Fayoum the Marsh, and made it *Pithom*, the West. When the king arose which knew not Joseph, the Israelites occupied a large part of the adjacent valley: "The land was filled with them." Zoan was not at San el-Hagar, but another name for Memphis or Tanis Magna. Comparing the names of the Patriarchs with the Arabic names of these canals and pyramids we find: *Minieh* Benjamin, *Bahr Jusuf* Joseph, [*Menas-she* (Herodotus) Manasseh, and *Beni Suef* Ephraim,] *Lisht* Naphtali, *Dashur* Dan [GAD] Asher, *Saggara* Isaachar, *Zauet el-Arrian* Zebulon.

"Simeon and Levi are brethren," the *Haramin* or brother pyramids. From the lion of Judah, H. O., the Sphinx the road still leads to the Fayoum, once famous for "the choice vine." At Gizeh were the royal pasturages of "the shepherd Philition

(Herodotus)." "His teeth are white with milk." The paw of "the strangler" was on the necks of the subject Egyptians. On the height of Abu-Roash Reuben was "the beginning of strength." Saida or Zidon was a haven on the Nile. Issachar saw that Memphis was "*Men-Nofer*" the good abiding place, and he abandoned his independence for "the pleasant rest" within the walls of the metropolis. Joseph is a fruitful bough by the lake Mæris, whose branches run over the wall of the Libyan hill, through the gorge past the two pyramids of El-Lahun and Howara (Avaris). The great bow of the lake, ninety miles long, abode in strength, and the blessings of the heaven above fell as dew and rain upon the vineyards and olive trees which were the crown of the head of him that was separate from his brethren. "Benjamin shall raven as a wolf." The canal of Minieh starts at "Wolf-town"-in the east,—"at evening"-in the west-it divides the spoil, or as the septuagint puts it, gives to the west its nourishment.

OUR WEIGHTS AND MEASURES.

Much fault has been found with the weights and measures in use by the English speaking people, and which have been handed down from times so ancient that we do not know from whence they came, or by whom they were devised.

It has even been proposed to set them aside and adopt those of more recent invention. After considerable investigation I find that our weights and measures had a good scientific origin, and that probably they were once more perfect than at present, and that with a little adjustment they can be restored to their original harmony. The inch is at the foundation of all our measures, and consequently of our weights.

By multiplying the inch we have three chief measures; one of 12 inches; one of 24 inches and one of 36 inches, all of which admit of being evenly halved and quartered.

This even division is a very useful quality in practice, and is

extended all through measures and weights. The favorite two-foot rule can thus be divided three times.

The inch is a beautiful little measure, the most convenient and most used of all. The measures of weight and capacity are not so satisfactory. The ounce, (once) which is our unit of weight, is also our unit of capacity. In avordupois weight a fluid ounce weighs an ounce. It is equal to 1.732+ cubic inches, which is divided into 437.5 grains, and one grain is = .00396 cubic inches. The number 1.732 is the square root of 3.

The ounce troy is = 480 grains, each grain being .00376 cubic inches.

The apothecaries' fluid ounce is = 1.8048 cubic inches., divided into 455.6 grains of .00376 cubic inches to the grain.

This does not agree with apothecaries' weight, which has 480 grains to the ounce.

It is not only the variety of ounces of weight and capacity, but the various number of grains contained in them, and even of the size of the grains themselves that make our tables confusing.

The ounce avoirdupois which is at once a unit of both capacity and weight, would seem to be the most suitable point about which to adjust all other measures. For measures of capacity the cube is the most natural and best suited for a standard form, and I think that in former times there was such a system connected with our measures of length.

Now the ounce of 1.722 cubic inches is not a cubic measure. But there was once an ounce derived from our cubic foot that fulfills all the conditions required.

The cubic foot consists of 1728 cubic inches, and the ounce of 1.728 cubic inches is just its thousandth part. This ounce is also a perfect cube of 1.2 inches to the side. The ounce being a cube, it is easy to make cubic measures out of them.

The drachm, being the eighth part of an ounce, is a cube also of .6 of an inch to the side.

The half pint is also a cube of 8 ounces, and the pint is two of these cubes set together.

The half gallon is a cube of 64 ounces, and the gallon is two of these cubes set together.

The pint weighs just one pound, and the gallon weighs eight pounds.

An avoirdupois gallon weighs ten pounds.

This ounce then brings all our weights and measures into harmony with the cubic foot.

The difference between the two ounces of 1.732 and 1.728 cubic inches is only four thousandths of a cubic inch; but the small difference is sufficient to throw our whole system into confusion.

The ounce of 1.728 cubic inches was divided into 432 grains, the Roman commercial ounce. $1.728 \div 432$ gives a grain of .004 cubic inches, which is just the difference between the two ounces.

This shows that the right number of grains in a cubic inch of water is 250; because $1,000 \div 250 = .004$.

Also, $1728 \times 250 = 432000$, which is the number of grains in a cubic foot of water, or just one thousand ounces.

This little matter of the grain can bring all our weights and measures into harmony with each other.

Eighteen pennyweight to the ounce of these .004 grains, instead of twenty brings troy weight into line.

Eighteen grains to the scruple, instead of twenty of the troy grains of .00376 cubic inches, brings apothecaries' weight into line.

Twenty-seven of these grains, even, instead of 27.34375 grains of .00396 cubic inches, brings avoirdupois weight into line.

Fifty-four of these grains of water, or minims, instead of sixty of .00361 cubic inches, brings apothecaries' measure into agreement with apothecaries' weight.

And so also with the imperial measure. The troy grain of .00376 cubic inches is too small, and requires 480 of them to make an ounce. There is just one grain too many in our present ounce.

$1.728 - .004 = 1.728$, and $1.732 \div 433 = .004$. This apparently small matter is sufficient to disarrange our whole system.

Exactly how, or when this came about it would be hard to

say. According to Sir John Herschel the English inch is too short by one thousandth part to be exactly cosmical. That an inch of 1.001 is contained 500,000,000 times in the axis of the earth.

Now the difference of these two inches is the difference of the two ounces. 1.728 cubic inches of 1.001 are equal to 1.732 cubic inches of 1.000, or English inches.

The ounce weight then is correct, and weights derived from it ought to be correct.

The capacity weights derived from the ounce are probably correct also. We need a uniform ounce and grain.

If the inch were made = 1.001, then our ounce will = 1.728 cubic inches, and if the grains in an ounce = 432, then each grain will = .004 cubic inches, and this is all that is needed to make our different systems mutually convertible.

The number of 432 is the square of the cubit of Memph, 20.7846 inches, and is associated with our measures of length.

$432 \div 12 =$ linear inches in a yard.

$432 \div 36 =$ linear inches in one foot.

$432 \div 3 =$ 144 square inches in a square foot.

$432 \times 3 =$ 1296 = square inches in a square yard.

$432 \div 48 = 9 =$ square feet in a square yard.

$432 \times 4 =$ 1728 = cubic inches in a cubic foot.

$432 \div 16 = 27 =$ cubic feet in a cubic yard.

$432 \times 108 =$ 46656 = cubic inches in a cubic yard.

It is also connected with time, being the 3000th part of the circle of seconds, which again is taken from a measure of the earth's circumference.

The ounce of 1.732 cubic inches was probably taken from the cubit of Memph, 20.7846 inches being the twelfth part of that number.

20.7846 then stands for the number of cubic inches in a pound of water.

To sum up, the cubic ounce is derived from the cubic foot, and the cubic drachm from the ounce.

The half pint is a cube and the half gallon is a cube; the pint is a double cube and the gallon is a double cube. The measures of length and capacity are thus intimately related.

The fluid ounce weighs an ounce, and the drachm weighs a drachm: the pint weighs a pound, and the gallon eight pounds, and the large gallon ten pounds.

This amply connects measures of weight and capacity, and they tend to rectify each other.

The ounce, then, of 432 grains, and 1.728 cubic inches is the unit, about which all of our weights and measures could be readily adjusted into harmonious relations.

WATSON QUINBY.

SILVER.

BY W. F. QUIMBY, M. D.

Gold and silver coin, from time immemorial, have constituted the money of the world.

The Creator, by endowing these metals with certain peculiar properties, as certainly designed them to be used for this purpose, as were wheat and corn intended for food, and wool and cotton for clothing. These metals were made difficult of attainment; and so skillfully were they placed in the rock, that their flow has been like the springs that furnish the water to the rivers that flow to the ocean.

So far, the demand seems to have regulated the supply; though the supply has of late been much supplemented by the use of paper money. But paper money derives its value from, and is based upon these metals. To demonetize either one of them then is to diminish, to a large extent the security of the paper currency.

The constitution of the United States plainly recognizes, coin of gold and silver as the legal tender money of the land; not gold or silver, but gold and silver.

Power to coin these metals into money, and regulate the relative value of the coins, was delegated to Congress; but not the power to *demonetize* either of them. Unless a special provision had been made, endowing the National Legislature with such a power, they might as well forbid the use of beef or pork for food.

The ordinances of God cannot be violated with impunity, and we have to work in harmony with their provisions, and not against them.

Because oxygen is the life-giving element of the air, you cannot, therefore, dispense with the nitrogen.

There was good reason for providing two metals suitable for currency; gold to express higher values, and silver for fractional currency, and common use. Even silver pennies are too small for convenience, and we use a cheaper substitute in copper. The silver, therefore is indispensable in commerce. What then can be the motive of those who wish to demonetize it?

It is stated that its bulk makes it inconvenient to handle in large values. But in these days when paper is almost universally used as a means of transfer, that objection is insufficient. Large movements of the metals are seldom necessary, and for international transactions gold is almost entirely used.

This very inertia of silver renders it a safe and suitable basis for paper currency. The superior convenience of paper money for commercial circulation, has displaced for this purpose, not only silver, but gold also.

The present national banking system is open to the objection, that the government being the debtor, demands the custody of the evidence of its own indebtedness.

Now, if the risk of such an imprudent arrangement belonged only to the bond-owners, the rest of the people might look on with serenity; but the whole business of the country is involved in the stability of the paper currency.

Again the paying off of the public debt by diminishing the basis, has the effect of diminishing the amount of the circulating medium; and this depresses values of all kinds.

But the National Treasury has, also, become a bank of issue. The objection to this agreement is that the metallic security is located in one place, Washington. A perfectly stable banking system could be based upon silver, in bars, in ingots and in coin distributed throughout the different states, but the paper limited and regulated by the general government as at present. Two dollars to one might be safely floated in such a system.

Gold might also be associated with the silver, but owing to occasional demands for exportation, it would be more fluctuating than silver.

It is urged against the use of both gold and silver, as currency that it is difficult to maintain a parity of value between them. This difficulty, if it is one, however, has always existed and the experience of four thousand years of the co-ordinate use of the two metals shows that it is rather fictitious.

All commodities used in commerce are subject to fluctuations of value. Gold and silver are no exceptions to this rule.

There is no such thing as an unchanging standard of value.

Gold is subject to rise and fall of price according to the abundance or scarcity of production, and the demand for commercial use.

One of the most important functions of silver money is to limit the price of gold. If silver were demonetized, the price of gold would be doubled, because the real money of the country would be diminished one half.

A house which before had been worth ten thousand dollars would only be worth five thousand; if a bushel of wheat had been worth two dollars, it would now be worth but one; if wages had been worth two dollars per day, they would now be worth but one.

If a man had bought a farm for ten thousand dollars and had paid five thousand on it, he would find his whole capital sunk; and so with stocks, railroads, and all real investments.

Is it any wonder then that hard times, and a general prostration of business came on when, without any warning at one fell swoop in 1873, silver was demonetized. There was no public demand for such a thing, nor any discussion on the subject, but suddenly and without comprehension of the consequences of such a measure, the fact was accomplished.

I suppose that at the time our government was very much in need of money, and that the interested few who had money to lend, said, "if you will demonetize silver you can have all the money you want;" for well they knew that thus the rate of interest, the price paid for the use of money, would be doubled. So they and all who derive an income from money loaned would be the gainers; but all others, from mechanics to employers who derive incomes from money invested in productive industry, would be losers.

No doubt plausible arguments were presented, and without being aware of the disastrous consequences, our public officers were induced to consummate the project. Now here is evidently a struggle of interest between the comparative few who derive incomes from loaning money, and the millions whose incomes arise from productive industry. For if money was made scarce, the price paid for the use of it, must increase. Who then shall prevail, the few, or the many?

In a country like this where every man votes, when the matter is understood, there can be no question as to the result. Wheat and corn are the chief grains used for food in the United States. Now, if in the interest of speculators in wheat, it should be decreed that

corn should not be an article of diet in the American Union, would not wheat advance in price, possibly double?

And for whose benefit, the people's or the speculator's? Cotton and wool are used for clothing. If, for the benefit of dealers in wool, it should be ordained that cotton should no longer be worn, would not wool advance in price? Or, again if we are prohibited from eating pork, would not beef and mutton rise in price? So if you prohibit the use of silver as money, the price of gold will advance, or what amounts to the same thing, the price of everything else, wages, property, stocks and other investments, will fall.

Providence has provided us with a variety of food, a variety of materials for clothing, and a variety of metals for money, so that if any one should happen to be scarce, the others will check its rise in price. For if you diminish the supply of anything, the demand remaining the same, the price must rise. So if money is made scarce either by demonetizing one of the precious metals, or by any other means, the value of all other commodities will diminish. At one time during the demonetization of silver it was attempted to make a corner in gold by interested parties to control the market. Had they succeeded, they would have been enabled to depress all values, and monied men could have bought stocks and other securities at a low figure, and houses for less money than it cost to build them. They only did not succeed because the government came to the rescue with abundant disbursements of gold. The men that engaged in this business, are the ones that most strongly urge monometalism, because, then they could more easily manipulate the market. But most all other business men would be at their mercy. It shows the danger of having only one of the precious metals in use for money, and that the scarcer of the two; for it puts it in the power of a few unscrupulous men to derange the whole business system of the country.

The present system of the government coining so many silver dollars per month, is not a correct one. It would be quite as proper for the government to say how much iron should be mined in a month, or how much coal should be dug, or how much cotton grown in a year. Owners of silver should be left free to coin it or not, and into what denominations. The demand will regulate the supply. No man will have silver coined into dollars that are not wanted. It has been urged that the silver dollars will not pass into circulation, but remain accumulated in the treasury. This is true also of the gold. There are far more silver dollars in circulation than gold ones. The reason that metallic dollars are not in demand, is that there are so many treasury and bank notes in use, and it is well known in the history of banking, that well secured notes will drive out of circulation coins of the same denomination. The fractional paper currency at one time entirely displaced the silver coinage; but when the paper was withdrawn the silver came into use and so it continues.

And so if the one and two dollar notes were withdrawn, the gold and silver dollars would come into use. This would be very impolitic, however, at the present time. It would be better to place the coinage of gold and silver on equal terms and then for the government to cease coining the silver dollars. It is farther urged that the silver dollar of 412.5 grains, is not of equal value with the gold dollar of 25.8 grains, and that therefore if silver coin is made a legal tender, its weight should be somewhat increased. It is not necessary that the coins should be of exactly the same value as they are continually oscillating in regard to each other, as well as to other commodities.

But it would not be proper to increase the weight of silver coins until their coinage is made free, and subject only to the same seigniorage as gold; for undoubtedly in that case the price of silver would go up. If a new use is discovered for anything, the supply remaining the same, the price must advance. If a method should be found of making clothing out of paper, it would soon cost more to print a newspaper. The same result would ensue, if printers ink should come into use for dyeing calico.

There is another reason why the weight of our silver coinage should not be increased.

The public debt was made payable in coins of that weight. There are two parties to the bargain, the money lenders on the one side, the people of the United States on the other. To increase the weight of silver coin would add to the burden of the people and be unjust. Or if you assert that silver has not declined in value, but that gold has advanced, to decrease the weight of our gold coinage would be unjust to the money-lender. It may have been shrewd, but not quite honorable, to contract to have a debt made payable in gold or silver coin, and then endeavor to demonetize the silver, so as to double the amount of the debt; and in effect all other debts.

It is further urged against the use of silver coin as money, that the United States cannot alone maintain it at par value in the face of its disuse by the rest of the world. This position is controverted by the fact that at the period of the demonetization of silver in 1873, the American silver coins of the present weight were at a premium.

It was even thought necessary at one time to reduce the weight of the subsidiary silver coinage in order to prevent its transportation to foreign countries. This is a matter that should be corrected; and let the silver be exported if any one wishes to buy it.

France also is an illustration of the falsity of this position. Surrounded by nations that have demonetized silver, she maintains its use much to her advantage.

The United States should preserve her entire liberty and independence in such matters. We should be very careful indeed about entering into alliances with the other nations that might prove inconvenient if not dangerous. It certainly would be a good thing if all the nations would demonetize silver, for then money would be cheaper, the rate of interest lower, and this again would result in stimulating business.

Banks of issue are usually based upon gold and silver coin. It may be broadly stated that all the paper money of our nation is based upon gold and silver coin. Now if silver should be demonetized gold, the scarcer of the two, would be left to bear the whole weight of the paper money. The hazard of contraction would be extreme from this cause alone; but suppose in addition that either from wars, or various complications and business troubles, a great demand for the exportation of gold should arise in Europe, then our great fabric of paper currency would be left without adequate support, and a great financial crash would ensue, disastrous to all the business interests of our country.

In addition to all these financial considerations, when we reflect that the production of silver is one of our most important industries, it would be very unwise in the American people to deprive it of its most useful quality, but its free coinage on equal terms with gold should be insisted upon.

It might be interesting to consider why the silver dollar was made to weigh just 412.5 grains. That number is the thousandth part of the diameter of a circle in terms of seconds. This might be a coincidence were it not that 2296 the number of square inches in a square yard, is the thousandth part of the circumference of a circle in terms of seconds. As the yard of 36 inches is one of the most ancient of measures, it is possible that a silver coin of 412.5 grains is equally ancient.

It is not less remarkable that the number of grains of gold in the half eagle 116.4 is equal to the diameter of the earth's orbit in terms of day parts.

THE UNIVERSAL MERIDIAN.

LECTURE BY DR. JANSSEN, AT THE PARIS GEOGRAPHICAL SOCIETY.

We wish to call the attention of our readers to this interesting paper by Dr. Janssen in "Nature."

It will be remembered that we wrote of the International Congress at Rome as being primarily and particularly a French metrical congress which adjourned to meet at Washington in October, 1884. This was ostensibly a great compliment to the Republic of the West but was really nothing more nor less than a little sop to the Americans for the purpose of inducing them to adopt the French metre. The idea that the meridian of Greenwich should be chosen as the prime was thrown out in order to catch the English. The whole scheme was perfectly transparent and was concocted by Dr. Barnard and his foreign coadjutors to foist upon the English speaking people their false metre.

Dr. Janssen's paper shows that "the best laid schemes of mice and men gang aft aglee." It will be remembered that the convention at Washington adopted Greenwich meridian as prime and agreed that astronomical and civil time should both begin at midnight. It is plain that France is not satisfied to accept the meridian of Greenwich. If she should succeed in effecting the adoption of the metrical system by the Anglo-Saxon world, she might agree amicably to accept the meridian, but not having accomplished her object, she is going back on the decision of the convention. Dr. Janssen argues in favor of the meridian of the Island of Ferro as prime. He is correct with regard to a neutral meridian, but that will be the Pyramid, not the Island of Ferro. Let him study this without prejudice.

When the question of the French metre came up, it was declared by Commodore Rogers to be out of order, but it appears from Dr. Janssen's report that it was discussed. He says:

After the discussion of these various questions, the labours of the Congress approached their term; it was then that the French delegation made the proposal it had been charged to present—a proposal having reference to an important extension of the decimal system.

The Congress of Washington, by its importance and by its object, which aimed definitely at the continuation of that great French work of unification and of progress inaugurated at the end of the last century, offered an altogether appropriate opportunity to ask for the world a new extension of those applications of the decimal system which constituted the whole merit and the whole success of our reform of weights and measures.

The extension had relation to the measurement of angles and of time.

At the date of the establishment of the metrical system the decimal division was, as is known, extended to the measures of angles and time. Numerous instruments were even constructed according to the new system. As far as time is concerned, the reform, introduced too drastically and without sufficient discretion, it may be said, clashed with too inveterate usages, and was rapidly abandoned; but in regard to the measure of angles, where the decimal division presents so many advantages, the reform held its ground much better, and has maintained itself in certain practices to this day. Thus, for example, the division of the circumference into 400 degrees was adopted from the beginning by Laplace, and it is currently employed in celestial mechanics. For the measurement of the arc of the meridian, whence the metre was derived, Delambre and Mechain availed themselves of repeating circles divided into 400°. Finally, in our day, Colonel Persier, Chief of the Geographical service, of our Ministry of War, makes use of instruments with decimal division, and at this moment calculates even logarithmic tables with eight decimals appropriated to this mode of division.

It is above all, however, when it is required to execute long calculations on angular measures that the decimal division presents immense advantages. On this point nothing but unanimity may now be said to reign among learned men.

The Conference of Rome, which assembled so many astronomers, geodesists, and eminent topographers—that is, just the men of most weight and having the greatest interest in the question—issued on this subject a resolution, the high authority of which it is impossible to disregard.

It is now, then, evident that the decimal system, which has already rendered so many services in the measurements of length, of volumes, and of weights, is called upon to render analogous services in the domain of angular magnitudes and of time.

I am aware that this question of the decimal division has to contend with legitimate apprehensions, principally in reference to the measure of time. People are afraid of doing violence to secular customs and overturning consecrated usages. On this aspect of the business, I think we ought to be fully assured. The lessons of the past will be put to profit. It will be understood how it was for having endeavored to push a reform beyond the due domain of science, and for having done violence to the habits of daily life, that disaster was experienced during the epoch of the Revolution. It is proper to resume the question, but it is proper to resume it with an appreciation of the limits which good sense and experience will always indicate to wise and experienced men.

I think the character of the reform would be sufficiently indicated by saying that the question is principally to make a new effort towards the application of the decimal system in the scientific world.

We met at first with a sufficiently warm opposition. The president was of opinion that the proposal should not be offered for discussion, but I have to acknowledge that he finally yielded very courteously, "out of deference," he said, "to the delegates of France, and because we are happy to do them honor in all things."

The majority decided that the proposal should be discussed. The French delegate then spoke, and the meeting passed to the definitive vote. The success was then complete, for the proposal was adopted by twenty-one votes, without one dissentient voice.

Such is the work of the Congress.

This work is considerable. Its importance, however, is derived much more from the principles enunciated by the Congress than from the solutions it adopted.

The establishment of a single meridian and of a universal day, the unification of the astronomical and civil days, the extension of the decimal system, these are reforms which the progress of science and of international relations rendered opportune and desirable.

In the application, however, of the principles, the Congress has been less successful.

In the choice of a prime meridian it allowed itself to be too much carried away by the practical and immediate advantages of a meridian already in very extended use, and disregarded the conditions which would have assured to its work a universal and definitive adoption.

In regard to ourselves we have in this question adhered to the part prescribed to us by our past, our traditions, and the very character of our national genius. Our proposal was precisely that which we should have adopted ourselves if we had had to take the initiation of this reform. The nation which created the metrical system could propose none other than it did. If our purely scientific and disinterested opinion did not unite the majority around it, the reverse was not for France, but for science. But science is the sovereign of modern times and one cannot now detach himself from it with impunity. It is vain to say that the meridian of Greenwich is *de facto* the universal meridian, that it reigns to-day over almost all the navies of the globe, and that its adoption only consecrates a fact which has already established itself and transforms into law the institutions of fact.

I reply that that is all true. I even add, if it is desired, that such is only what is merited by the great labors of the English marine—labors which, we the initiators of hydrography, more than any others appreciate at their true value. But however considerable may be these labors and however great the numbers of those availing themselves of them, yet with the experience of the past and in the name of history I say that these merits will not be able to prevent the inevitable consequences resulting from the personal character of this meridian. And in point of fact has not France—she, too—had a geographical career? The meridian of the island of Ferro, which soon, in the hands of Gillaume Delisle and of our great geographers of the Eighteenth century, became French—did it not bear sway in cartography for more than two centuries, and that with an authority not even equalled to-day by that on the other side of the Channel?

And yet the meridian of the island of Ferro, after that brilliant career, is to-day more and more abandoned, and the fair attempt of the Seventeenth century finds itself entirely compromised!

What is the cause, then, which has led to this vexatious result? Apparently a mere trifle. It is because, as we have already said, instead of leaving the meridian of the island of Ferro in conformity with its first intention instead of maintaining it in the purely scientific character which it received from the hands of Richelieu, that great spirit who so well understood that an institution of a universal order must bear no personal investiture, this character was imprudently changed by bringing the position of this meridian into relation with that of Paris, in place of bringing the position of this capital, like any other point, into relation with it.

That is the mistake which compromised the fortune of this reform so firmly and judiciously established by its illustrious author. Now, this mistake, is it not committed to-day by once more taking a national meridian and making it the universal point of departure for longitudes? Is one then not justified in foreseeing that the cause would produce the same effects, with the difference, nevertheless, that in the advanced state of civilization prevailing to-day among the nations, a particular supremacy, of whatever nature, would be much more promptly abandoned than it was two centuries ago.

It is, accordingly, much to be feared that the establishment of the new meridian, if it even succeed in getting established, would again be an attempt without a future.

France who finds in the history of even her own past the double lesson of the progressive abandonment of her national meridian and of the ever growing appreciation of

the scientific and improved system of weights and measures, ought to make known to Congress a counsel dictated by her own experience.

Does this attitude, however, sufficiently absolve us? Have we discharged towards the world and toward ourselves the debt due by a generous and enlightened nation which has always been delighted to take the initiative tasks conducive to the general well being? I do not think so; and were it allowed to me to express a wish, it would be that we should on this occasion again join example to precept. I should like that the France of the nineteenth century, considering herself the heir of the France of the Seventeenth, would with the benefit of the experience she has in that interval acquired, resume the fair attempt of Richelieu and herself establish the neutral meridian.

This institution, well conceived and planted on exclusively scientific bases, would gradually rally to it the adhesion of all. England herself, who, if possessing a lively national sentiment, has likewise an appreciation of what is just and great, would end by attaching herself to it. And then would this reform always attempted in vain, and again quite recently compromised, be finally secured to the world and to science.

Be that as it may, and outside the question of the meridian which is not yet settled, let us not forget that the accession of England to the Metrical Convention and the resolution for the extension of the decimal system are results demonstrating that our presence at Washington was not useless either to science or to progress.

Immediately after the convention a bill was presented to Congress for the purpose of making the French metric system compulsory in all government transactions after March 1st, 1889. That bill did not pass last Congress, nor will it pass next, or any succeeding Congress.

THE LUNAR ASTRONOMICAL YEAR.

The lunar astronomical year consists of twelve lunations; and since the length of a lunation is different at different times, we have:

- ^d
 29.5315343 = maximum length of lunation.
 29.5305991 = lunation 4000 years ago.
 29.5305887 = present length of lunation.
 29.5305311 = minimum length of lunation.

Multiplying these numbers by 12 we get:

- ^d
 354.3784116 = maximum length of lunar year.
 354.3671892 = length of lunar year 4000 years ago.
 354.3670644 = present length of lunar year.
 354.3663732 = minimum length of lunar year.

JOHN N. STOCKWELL.

THE INSTITUTION OF CIVIL ENGINEERS LONDON, ENGLAND.

EXTRACT FROM MINUTES OF PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS, LONDON, ENGLAND, JANUARY, 20th, 1885. SIR FREDERICK J. BRAMWELL, F. R. S., PRESIDENT, IN THE CHAIR.

Paper by Arthur Hamilton Smythe, B. A. "A comparison of British and Metric measures for engineering purposes." We will present the main features of this paper which argues in favor of the Metric system in our next issue. In the discussion upon it, Sir Frederick Bramwell read an extract from a speech of Mr. Beresford Hope in the British Parliament, May 13th, 1868.

"Decimalization is a process of calculation for the benefit of the calculator. Metricalization is not a process, but a system of measures, so called from its unit or base, which happens accidentally to be facilitated by the ease with which its details may be worked out through means of the decimal notation. The metrical system itself is an abstruse and philosophic one, founded upon the fancy of some Frenchmen of science at the time of the revolution, who adopted as the starting point of the system the measurement of the earth's circumference, and by way of a unit, measured the 10,000,000th part of a quadrant of a meridian through Paris (about 39 5-13 inches) which they termed a 'Meter.' No doubt those multiples and aliquot parts of the meter which form the French measures of length are adjusted to meet the decimal system, as are also the measures of area, capacity and weight, which are by a further process built upon the metre. But decimal notation is equally applicable for the man who finds that it helps his calculations whenever he has to work out his sum in our old weights and measures; for decimals are really not a system, but, as I said, a process for easily reaching a certain practical result, like logarithms or algebraical symbols. I grant all the advantages which their friends urge in favor of decimals for the purpose of calculation; but it requires no act of parliament to enable those who appreciate them to make their own calculations by way of decimals.

The sufferers will be the little people, the small buyers and sellers—the hucksters and the marketers—who will be compelled under the penalties of a compulsory act of parliament, to learn and to use a system which is, in its outward type, as non-natural as it is novel. I will, in order to prove my point, take the most familiar instance, and show that although a great deal has been said about the advantages of the French subdivision, yet, after all, our subdivisions are more natural for the ordinary purposes of life. If a boy has to divide an apple, does he ever think anything about the circumference of the earth and its aliquot parts, or about the decimal system and its unrivalled facilities of calculation? No; but he takes his apple, and cuts it into two parts if he wants to halve it, and those halves into quarters if he wants to make four parts of it. In the same way, if a housewife has to cut up the loaf for her family, she divides it into two, into four, eight, or sixteen parts, and the sixteen people share their bread naturally. Supposing the loaf to weigh originally a pound, each of these sixteen divisions comes out an ounce. Such is the *rationalité* of our system of measuring, the binary system so called, founded on continual halving, and proved by the common sense of mankind, before the great era of enlightenment inaugurated in 1789, to be the most convenient and natural one.

Decimal notation is then, after all, a process, and not a system. It is a process good for the school, and good for the bustling counting house and the large sum, but the

poor man would be completely thrown out if he had to employ under penal legislation too—decimal points for the purpose of measuring his little purchases by halves and quarters. With permissive means, such as now exist, the system will come in where it is wanted; but under a compulsory enactment it will intrude itself everywhere, and show itself in its real colors as nothing less than a public nuisance.

• • • • •

If the theorists and the men of wealth—men of brains, it may be, but as certainly men of self assurance—have worked out this system for themselves, there are poor men, who form the majority of mankind for whom it will never answer, and there are men of brains at least equal who are decidedly opposed to its adoption. Is it not possible that our present system is not only quite as convenient and useful as the metric system, but a little more philosophical also? Why should a standard founded on the quadrant of the earth's circumference passing through the meridian of Paris be a better one than ours? No doubt it looks very solemn, from the grand nomenclature with which it is propped, but all those odd names for the French weights and measures were adopted at the first heat of a great revolution, when the pedantic aping after Greek and Latin terms led to their being applied to everything novel and French—from the scanty proportions of a lady's dress to the most intricate principles of jurisprudence and moral philosophy.

May it not, I repeat, be just possible that our unit is as good as that of the French, even upon the most abstract grounds?"

TWO PYRAMIDS.

O'erlooking Egypt's mighty stream doth rise,
 A monument uplifted toward the skies,
 Piled stone on stone by human arts and hands
 On rock foundation firm amid the sands,
 Which wash and wear against its hoary sides,
 While sands and winds its unmoved might derides.
 In ancient time its origin is lost,
 Nothing remains to tell us what its cost.
 No record in itself it yet reveals,
 Nor shows what purpose its vast form conceals.
 For centuries to mankind its use unknown,
 Or, if of any use more than a stone,
 There it yet stands, a great enigma still
 For him to meditate upon, who will
 Into the past or future strive to peer,
 Strive on and understand not, but revere
 What is unknown, and, may he wisely pause
 Ere his presumption questions ways and laws,
 Which his Creator kind perhaps may hide.
 Lest man o'er all might aim unreined to ride,
 And nothing think too high for him to know,
 But all from his own will and reason grow.
 By square and compass, line and plummet's aid,
 With accuracy each measurement is made.
 Angle and circle noted well, by all
 Who in the task engage or on it call,

Its secrets to deliver as their prize,
And yield its plan and object to their eyes.
Silent, as yet, or in uncertain tones,
E'en if they speak at all, its massive stones
Remain a wonder to a marvelling host,
A more than wonder, since not time can boast
A victory here, though valiant is the fight
And time, man, elements 'gainst it unite.
One among seven, it stood in ages past,
The other six destroyed, and this the last
And only, now in its lone grandeur stands
Towering above the Libyan desert sands.
Why it was built we vainly ask the world?
Who from its summit its great capstone hurled?
Who robbed it of its polished case, and when?
Who broke and marred its pavement, and who then
Destroyed its corners, its great trenches spoiled,
Its causeway ruined and its beauty soiled?
What is the meaning of its empty coffer?
Where is the cover? Who reply can offer?
Was it with inches built, or cubit measure?
Was it for naught, or where its hidden treasure?
Where shall we turn or hope to find solution
For all these ancient problems' evolution.
Unyielding mathematics strictly tell
Its length and breadth in cubit, inch or ell,
All its proportions bear a nice relation
To some great plan conceived ere its foundation.
We ask the stars its age, and what they say
Fills us anew with wonder and dismay,
Almost abashed we stand upon its height,
And questioning gaze into its history's night.
If we incline to think superior power
To man's had influence in its natal hour,
Proud science scoffs, nor spares one vicious thrust
For those who overruling Providence do trust;
While wisdom is more modest, so more true,
Nor dares a step which one day she may rue.
Knowledge once gained is so much in advance,
But so-called science often breaks its lance,
And has again new armor to essay,
Which proving worse is shortly cast away.

This pyramid of stone can but remind
All of the wise ones here who comfort find
In thinking of these things and future time,
Of what the Lord reveals, the end of crime,
The setting up a kingdom on the earth,
When joy and peace and love shall have new birth;
When e'en the creature innocent of sin,
But suffering for man's fault shall come within
The radius of the blessings then so free

That all that doth offend away shall flee.
 When nothing shall pollute the living fountain,
 Nor yet "destroy in all his holy mountain."
 When all the building of His saints complete
 Of "living stones framed fitly" too, and meet
 To "reign on earth," and rule each subject nation
 With truth and justice, "bringing in salvation."
 "A stone cut from a mountain without hands,"
 Shall erst increase and fill all heathen lands,
 Shall grow and prosper, men shall sheathe their sword.
 Creation sing the "kingdom is the Lord's,"
 A universe beholding wrapt in light,
 The sun of Righteousness dispelling night.
 Wisdom unsearchable shall banish doubt,
 Truly, "His judgments are past finding out."
 A moral pyramid, thus uphealt shall be
 Of which the type in Egypt's midst we see
 Who is a Rock," but our own Lord and God
 On whom is built foundation sure and good
 Of prophets and apostles, wisely taught
 By Him whose purposes ne'er come to naught.
 And "Jesus Christ, the chief and corner stone,"
 Crowning the structure, for 'tis He alone,
 Who is the "Head," who is the life, the way,
 The truth, our joy, who wait and wish the day
 For "His revealing with the saints," who weep
 His long delay and grieve for "those who sleep,"
 Whom He will raise, and "bring with Him" and give
 Eternal joy and peace "and they shall live."
 So, these two pyramids no capstones bear,
 The stone one missing is, we know not where,
 Our "Head" and "Cornerstone" shall yet return,
 Nor then be spurned, but all the spurners spurn.
 Shall not the pyramid in Egypt's sands
 Abide its time till all the ransomed bands
 Shall look upon its beauty, then restored,
 And hail it as an "altar to the Lord,"
 A "sign and witness" in proud Pharaoh's home
 "Unto the Lord of hosts," with Jesus come?
 Shall not the type and witness yet be crowned,
 When earth's millennial jubilee shall sound?
 The nations no more rivalling in arms,
 Nor trump of war proclaim its loud alarms.
 But, joining hand in hand, the stone to place
 Upon its top, and say, to it be grace,
 A headstone worthy of its ancient fame,
 Known not as Geezeh, but, by Jesus' name.

MRS. THOMAS BASSNETT,

Jacksonville, Florida, April 7, 1885.

THE KABBALAH.

EXTRACTS FROM THE WORK OF CHRISTIAN D. GINSBERG, LL. D.

A system of religious philosophy, or more properly of theosophy, which has not only exercised for hundreds of years an extraordinary influence on the mental development of so shrewd a people as the Jews, but has captivated the minds of some of the greatest thinkers of Christendom in the Sixteenth and Seventeenth centuries, claims the greatest attention of both the philosopher and the theologian. Listen to the story of its birth, growth and maturity as told by its followers: The Kabbalah was first taught by God himself to a select company of angels, who formed a Theosophic school in Paradise. After the fall the angels most graciously communicated this Heavenly doctrine to the disobedient child of earth, to furnish the Protoplasts with the means of returning to their pristine nobility and felicity. From Adam it passed over to Noah, and then to Abraham, the friend of God, who emigrated with it to Egypt, where the patriarch allowed a portion of this mysterious doctrine to ooze out. It was in this way that the Egyptians obtained some knowledge of it, and the other nations could introduce it into their philosophical systems. Moses, who was learned in all the wisdom of Egypt, was first initiated into it in the land of his birth, but became most proficient in it during his wanderings in the wilderness, when he not only devoted to it the leisure hours of the whole forty years, but received lessons in it from one of the angels. By the aid of this mysterious science the lawgiver was enabled to solve the difficulties which arose during his management of the Israelites. He covertly laid down the principles of this secret doctrine in the first four books of the Pentateuch, but withheld them from Deuteronomy. This constitutes the former the man and the latter the woman. Moses also initiated the seventy elders into this doctrine, and they again transmitted the secrets from hand to hand. Of all who formed the unbroken line of tradition, David and Solomon were most initiated into the Kabbalah. No one, however, dared to write it down, till Simon Ben Jochai, who lived at the time of the destruction of the second temple. Having been condemned to death by Titus, Rabbi Simon managed to escape with his son and concealed himself in a cavern where he remained for twelve years. Here he occupied himself entirely with the contemplation of the sublime Kabbalah, and was constantly visited by the prophet Elias, who disclosed to him some of the secrets which were still concealed from him. Here, too, his disciples resorted to be initiated by their master into these divine mysteries; and here, Simon Ben Jochai expired with this Heavenly doctrine in his mouth, while discoursing on it to his disciples. Scarcely had his spirit departed when a dazzling light filled the cavern so that no one could look at the Rabbi; whilst a burning fire appeared outside, forming as were a sentinel at the entrance of the cave, and denying admittance to the neighbors. It was not until the light inside and the light outside had disappeared that the lamp of Israel was extinguished. As they were preparing for his obsequies, a voice was heard from Heaven saying: "Come ye to the marriage of Simon B. Jochai. He is entering into peace and shall rest in his chamber." A flame preceded the coffin, which seemed enveloped and burning like fire. And when the remains were deposited in the tomb another voice was heard from heaven saying: "This is he who caused the earth to quake and the kingdoms to shake." His son, R. Eliezer, and his secretary, R. Abba, as well as his disciples then collated R. Simon B. Jochai's treatises, and out of these composed the celebrated work called *Sohar* that is *Splendor*, which is the grand storehouse of Kabbalism.

Taking this *ex parte* statement for what it is worth, we shall have to examine the oldest documents which embody the tenets of the Kabbalah, and compare these doctrines with other systems, in order to ascertain the real date and origin of this theosophy. But, before this is done, it will be necessary to summarize as briefly as possible those doctrines which are peculiar to the Kabbalah, and which constitute it a separate system within the precincts of Judaism. The doctrines are as follows:

1. God is boundless in his nature. He has neither will, intention, desire, thought, language, nor action. He cannot be grasped and depicted; and for this reason, is called *En Soph*, and as such He is in a certain sense not existent.

2. He is not the direct creator of the universe, since He could not will the creation; and since a creation proceeding directly from Him would have to be as boundless and as perfect as He is himself.

3. He at first sent forth ten emanations, or *sephiroth*, which are begotten, not made, and which are both infinite and finite.

4. From these *Sephiroth*, which are the Archetypal man, the different worlds gradually and successively evolved. These revolutionary worlds are the brightness and express image of their progenitors, the *Sephiroth*, which uphold all things.

5. These emanations, or *Sephiroth*, gave rise to or created in their own image all human souls. These souls are pre-existent. They occupy a special hall in the upper world of spirits, and there already decide whether they shall pursue a good or bad course in their temporary sojourn in the human body, which is also fashioned according to the archetypal image.

6. No one has seen the *En Soph* at any time. It is the *Sephiroth* in whom the *En Soph* is incarnate, who have revealed themselves to us, and to whom the anthropomorphisms of Scripture and the Hagada refer. Thus when it is said, "God spake, descended upon earth, ascended into Heaven, smelled the sweet smell of sacrifices, repented in his heart, was angry," etc., or when the Hagadic works describe the body and the mansions of the Deity, etc.; all this does not refer to the *En Soph*, but to these intermediate beings.

7. It is an absolute condition of the soul to return to the infinite source whence it emanated, after developing all those perfections, the germs of which are indelibly inherent in it. If it fails to develop these germs, it must migrate into another body. And in case it is still too weak to acquire the virtues for which it is sent to this earth, it is united to another and a stronger soul, which, occupying the same body with it, aids its weaker companion in obtaining the object for which it came down from the world of spirits.

8. When all the pre-existent souls shall have passed the probationary period here below, the restitution of all things will take place; Satan will be restored to an angel of light, hell will disappear, and all souls will return into the bosom of the Deity whence they emanated. The creature shall not then be distinguished from the Creator. Like God, the soul will rule the universe. She shall command, and God obey.

The books of the Kabbalists are: 1. The Book of Creation. 2. The *Sohar*. 3. The Commentary of the Ten *Sephiroth*. The Book of Creation or *Jetzira* pretends to be a monologue of the patriarch Abraham, and premises that the contemplations it contains are those which led the father of the Hebrews to abandon the worship of the stars and embrace the faith of the true God. The whole treatise consists of six *Perakim* or chapters, subdivided into thirty-three very brief *Mishnas* or sections. The design of this treatise is to exhibit a system whereby the universe may be viewed methodically in connection with the truths given in the Bible, thus showing from the gradual and systematic development of the creation, and from the harmony which prevails in all its multitudinous component parts, that one God produced it all and that he is over all. The order in which God gave rise to this creation out of nothing, and the harmony which pervades all the constituent parts of the universe are given by the analogy which subsists between the visible things and the signs of thought, or the means whereby wisdom is expressed and

perpetuated among men. Since the letters have no absolute value nor can they be used as mere forms, but serve as the medium between essence and form, and like words assume the relation of form to the real essence, and of essence to the embryo and unexpressed thought, great value is attached to these letters, and to the combinations and analogies of which they are capable. The patriarch Abraham, therefore employs the double value of the twenty-two letters of the Hebrew alphabet; he uses them, both in their phonetic nature and in their sacred character, as expressing the divine truths of the scriptures. But, since the Hebrew alphabet is also used as numerals, which are represented by the fundamental number ten, and since the vowels of the language are also ten in number, this decade is added to the twenty-two letters, and these two kinds of signs—that is, the twenty-two letters of the alphabet and the ten fundamental numbers—are designated the thirty-two ways of secret wisdom; and the treatise opens with the declaration—"By thirty-two paths of secret wisdom, the Eternal, the Lord of Hosts, the God of Israel, the living God, the King of the universe, the Merciful and Gracious the high and exalted God, He who inhabiteth eternity, glorious and holy is His name, hath created the world by means of numbers, phonetic language, and writing." First of all comes the fundamental number ten. This decade is divided into a tetrad and hexad, and thereby is shown the gradual development of the world out of nothing. At first there existed nothing except the Divine Substance with the creative idea and the articulate word as the Holy Spirit, which is one with the Divine Substance and indivisible. Hence the spirit of the living God stands at the head of all things and is represented by the number one. "One is the spirit of the living God, blessed be His name, who liveth for ever, voice, spirit and word, this is the Holy Ghost." From this spirit the whole universe proceeded in gradual and successive emanations, in the following order; The creative air, represented by number two, emanated from the spirit. In it he engraved the twenty-two letters." The water again, represented by number three, proceeded from the air. "In it he engraved darkness and emptiness, slime and dung." Whilst the ether or fire, represented by the number four, emanated from the water. "In it he engraved the throne of his glory, the Ophanim, the Seraphim, the sacred animals, and the ministering angels, and from these three he formed his habitation; as it is written—"He maketh the wind his messengers, flaming fire his servants." These intermediate members between the Creator and the created world sustain a passive and created relationship to God, and an acting and creating relationship to the world; so that God is neither in immediate connection with the created and material universe, nor is his creative fiat hindered by matter. Then comes the hexad, each unit of which represents space in the six directions, or the four corners of the world, east, west, north and south, as well as height and depth which emanated from the ether, and in the center of which is the holy temple supporting the whole.

These constitute the primordial ten, from which the whole universe proceeded. And lastly follow the "twenty-two letters, by means of which God, having drawn, hewn and weighed them, and having variously changed and put them together, formed the souls of everything that has been made and that shall be made."

These twenty-two letters of the alphabet are then divided into three groups, consisting respectively of, 1. The three mothers, or fundamental letters, 2, seven double and 3, twelve simple consonants, to deduce therefrom a triad of elements, a heptade of opposites, and a duodecimo of simple things.



These cuts of the United States seal have been furnished by the kindness of Lieutenant Totten, U. S. A., the author of 'An Important Question,' which all our members should own and read. The cut of obverse of the seal, to accompany Mr. Weldon's paper, was cut from the medal of the anniversary of the adoption of our seal issued by the government of the United States, hence should be authentic.



The reverse is the plan proposed by the writer as a proper cut for this seal.

A plan proposed later by Lieutenant Totten has been sent us, but there was not time enough to have it cut for the present number. It has the same features as that proposed by the writer, but is better arranged and is accepted as superior, only, probably, excepting the limited number of steps, which should be just as many as existed in the Pyramid under the capstone.

C. L.

THE GRAND GALLERY AND THE BASE OF THE GREAT PYRAMID.

In the *INTERNATIONAL STANDARD*, the American magazine of the International Institute for preserving and perfecting the Anglo-Saxon weights and measures, for July, 1884 (vol. ii., No. 2, pp. 226, 227), Mr. J. H. Dow writes thus: "Possibly a full mathematical demonstration of the superhuman perfection of the Great Pyramid record will very soon be revealed, through the relations of the grand gallery to the Pyramid base." I am very glad to be able to show that the length of the grand gallery is, in a wonderful manner, scientifically connected with the base of the Pyramid.

When the sloping floor of the grand gallery has risen 1-100,000th of the area of the square base of the Pyramid *in inches*, = $\frac{9131.055^2}{100,000} = 833.762$, above the level of its commencement at the north wall, its length = 1881.59 + inches, which is the length of the floor line of the gallery between its north and south walls, as nearly as it will admit of exact measurement at the present day. This proves that the length of the grand gallery, as well as the length of the ante-chamber and king's chamber (and I may add, of the queen's chamber*), is connected with the Pyramid base, and therefore with the days in a solar year, because, as it is hardly necessary to add, a base-side of the Pyramid equals, in inches, the days in twenty-five solar years = $365.2422 \times 25 = 9131.055$. In this connection the sum may be varied thus: The vertical height at the south wall of the apex of the geometrical triangle formed by the length of the inclined floor of the grand gallery equals = 1-100,000th of the square of the days in twenty-five solar years = 833.762. The angle of inclination on which this calculation is based is 26° 18' 10", which is, beyond doubt, the angle that was *intended* by the ancient builders.

This theorem gives the same length for the grand gallery as is given by Mr. James Simpson in the *Banner* for March 19, 1879 (vol. iii., No. 116), amongst other excellent equations, in the following:

$$\frac{365.2422 \times 51.51646}{10} = 1881.5985.$$

Such simple and yet highly scientific evidence as this cannot be refuted. It is preposterous for opponents to say that it is the result of mere blind coincidence. The wonder is that these "scientific teachers" can get so many to follow them thus blindly down the ruck of prejudice. Mr. R. A. Proctor has somewhere made a statement, I believe in his 'Myths and Marvels of Astronomy,' but I have not the book at hand at present to make the reference, to the effect that "the more coincidences brought forward connected with Pyramid mensurations the less he should think of them." This is tantamount to saying, that the greater the accumulation of proofs of the superhuman, scientific origin of the

*The length of the queen's chamber equals eleven-tenths of the width of the king's chamber = $\frac{206.066 \times 11}{10} = 226.6726$; and the length of the queen's chamber equals the diameter of a circle of equal area to the area of a square with a side = $\frac{91.31055 \times 22}{100} = 200.882$.

Great Pyramid, the less he (Mr. Proctor) would be ready to receive them. It is an axiom that a mathematical proposition proved in half a dozen different ways has more value than one proved once only, but when applied to the Pyramid, Mr. Proctor evidently thinks that this good old rule ought to be reversed.

NOTE.—Since the above was written, I have noticed the following: A square with a side equal to the area of the square base of the Pyramid = 9131.056×9131.056 , has the same area as a circle with a diameter equal to 50,000 times the length of the grand gallery = $1881.5985 \times 50,000$.

F. GASS.

LETTERS.

LETTER FROM REV. H. G. WOOD.

SHARON, PA., July 14, 1885.

Dear Sir.—I have reached the conclusion, with very strong evidence, that the standard Memphis cubit, of which the Turin cubit is a specimen, was the cubit of the Pyramid, the Hebrew cubit, and the cubit of Ezekiel. The points which I think can be well sustained are:

- 1st. The whole length was 20.625 British inches, divided into $28.28 = \frac{1}{2}$ of 56.56 digits, and symbolized Jehovah, and might properly be called the *mystical cubit*.
- 2d. The double line at the twenty-fourth digit from the right hand indicated the *secular cubit* of 17.5 B. inches.
- 3d. The space of nine digits, between the fifteenth and twenty-fourth digits, equal to 6.56 inches, was the "span."
- 4th. The four left hand digits made the "handbreadth" equal to $3\frac{1}{4}$ inches.
- 5th. The *standard digit* was .7292 inches.
- 6th. The palm was $\frac{1}{4}$ of the twenty-four right hand digits or secular cubit.
- 7th. Ezekiel's cubit, of a cubit and a handbreadth, was 24 standard digits + the 4 longer digits at the left hand.
- 8th. The cubit to the knuckles or joint was the half of the double cubit of 41.25 inches, and the joint allowed the double cubit to be folded like our two-foot rule.

I find nothing in the Scriptures in conflict with these points, and I believe they are in harmony with the facts of antiquarian research.

Faithfully yours, H. G. WOOD.

LETTER FROM R. COURTENAY.

TANNA, BOMBEY PRESIDENCY, 29, 4, '85.

Dear Sir.—I am most gratified at your asking me to become a member of the Institute. I have long been a student of the Pyramid, and I would gladly join you in resisting the introduction of the French system of weights and measures. But I would like to be satisfied on one point: There is nothing that the profane Egyptologist more desires than to show that the Pyramid was the outcome of Egyptian idolatry, and that in it were embodied merely Egyptian ideas of that remote period. John Taylor and Professor C. Piazzi Smyth, on the contrary, lay as the very foundation stone of their theories that the Pyramid was in Egypt but not of Egypt. In his latest answer to Barnard, Professor Smyth writes regarding the inspiration under which it was built: "In-

spiration afforded apparently to one of the earliest Hebrew prophets . . . once temporarily in Egypt, but antagonistically to the Egyptian idolatry there." I have always felt it to be a matter of profound satisfaction that with the exception of the oval marks of the king there was not an inscription of any kind on the Pyramid to show the most distant connection between it and any of the hosts of Egyptian divinities, for I felt sure that had such a connection been established it would be vain to look there for the Lord Jesus Christ, for He would never share a temple with any heathen god or goddess. "What fellowship hath Christ with Belial or the Temple of God with idols?" I have therefore been much disquieted by recent articles in the *INTERNATIONAL STANDARD*, the tendency of which is to break down the partition wall between the Hebrew worship of God and pagan idolatry. At page 606 of the January number the *crux ansata*, the obscene symbol Tau of the pagan mysteries, is confounded with the cross of Christ, as was done by the Roman Church in the time of Constantine with terrible consequences that have survived to the present time. I would ask you to compare carefully the article on the Sphinx in the November number with what Professor Smyth has written on the same subject in pp. 507 to 512 of 'Our Inheritance.' (4th ed.) Then it is quite true that Isis and Isa or Isha were the same, but this only shows more clearly (what has been demonstrated by able writers) that Isis was the Ishtar of the Babylonians, the goddess of beauty and lust, the Ishtareth (Ashtoreth) of the Phœnicians, whose symbol also was the moon. The Bible leaves us in no doubt as to the mind of the Lord in regard to the notoriously impure worship of that divinity. (Jeremiah xlv. 17-19, 22; I Kings xi, 5, etc.) I firmly believe that the mysteries of Isis, afterwards transferred to Eleusis, came into existence during those 105 years whilst the Great and second Pyramids were being built, during all of which time the temples were closed, and the Egyptians were forced to practice their idolatrous rites in secret. I hold, therefore, that the Shemitic origin of the Pyramid and its entire freedom from, and complete antagonism to, pagan idolatry are fundamental principles without which it would be impossible to assign any sound reason why any Christian man should study the Pyramid or expect to find in it a repository of the divine wisdom. I trust, therefore, that in joining the Institute I shall not be identifying myself with a body holding any opposite views to these. But I infer that the passages to which I object were used rather in a poetical sense than as expressions of deep beliefs. I do not suppose that the Institute are a whit more friendly to Egyptian idolatry than I am myself, but I wish to elicit a clear statement of their views on so vital a point. In the expectation that they will be found to coincide with my own, I ask you to do me the honor of enrolling me as a member of your society.

I am yours sincerely,

R. COURTENAY

EXTRACT FROM LETTER OF GEORGE LEACH.

RIVERSIDE, SAN BERNARDINE COUNTY, CAL., June 24, 1885.

I have been greatly interested in your article on "The Unveiling of Isis" and the remarkable manner in which you have been led to the evidences of the 12th of Revelation applying to this nation. As you have brought the facts out, it is almost impossible to doubt your position; and why should it not be so? The Divine Word is infinite in itself—it is HIS WORD, it must be as infinite as Himself and never can be exhausted. Hence that the chapter alluded to is fulfilled in the planting of this great nation, it does not follow that it may not have other and deeper fulfillings in the future, which I believe it has. Hence I see that your "Unveiling of Isis" points to a higher and greater and more beautiful truth than Christendom has yet believed.

Respectfully yours,

GEORGE LEACH.

JABALPUR.

DEAR SIR :—In forwarding the annual subscription of \$2.00 to your address, through the post office, I would, in expressing my readiness to become a member of the International Institute, lay stress on the prominent position occupied in the Institute by Professor C. P. Smyth, who is a firm believer in the truth of the Bible and the Shemitic origin of the Great Pyramid. I take for granted that all members of the Institute are believers in a divine revelation and entirely opposed to the system of religion professed by the ancient Egyptians at the time of Israel's bondage. You will excuse my making these remarks, as I may have entirely misunderstood the drift of certain passages in the specimen number you have so kindly sent me.

I am, dear sir, yours sincerely,

GEO. H. O'DONEL.

Church Mission High School, Jabalpur, C. P., India.

12 AVENUE ROAD, REGENTS' PARK, N. W.

Yours of 18th April reached me in due course, and I have to thank you for so far interesting yourself in my book as to ask the Rev. H. G. Wood to give his attention to the study of Pyramid chronology.

In comparing the measures of the grand gallery with Scripture chronology, Mr. Wood should be careful not to pay too close a heed to the dates in our Bibles by Bishop Usher—nor accept the error continually perpetrated by modern chronologists of placing the year of Christ's birth anywhere between B. C. 8-4. I go on the principle that the birth of our Saviour really and truly marks the commencement of the Christian era, even as regards dates. This is ably confirmed by the Rev. Mr. Galloway in "Chain of the Ages," compiled from historical sources alone, without the slightest leaning towards Pyramid symbolism.

My book has now been published close upon three years. It has met with as much success as can be hoped for a book of that character. I do not know whether Americans have purchased, but should think not, as you say these truths are not so widely known as in this country. I see not the slightest reason to change my views as to Pyramid teaching—the reverse. Every month that passes, as events are unrolled, reveals the wondrous edifice to be of divine origin and a revelation concerning the periods and times of the end. How serious and solemn are the times we are now living in. How deceitfully, how cunningly, the enemy of souls is trying to seduce them from their high allegiance by the specious devices of lawlessness and atheism. You will perceive, from pages 140 and 147 of 'Tower of Egypt,' that I believe anti-Christ will be thirty years old when he assumes regal powers, and as the Pyramid teaches us he may be expected in about A. D. 1912 (see page 93) he must now be living on the earth, dandled upon a mother's knee—unknown to all, but sure to be revealed when the set time arrives. Does not this conviction behoove us to see that, as virgins waiting for the bridegroom, our lamps are kept trimmed and burning.

Yours sincerely,

ARTHUR R. GRANVILLE.

TRANSACTIONS OF THE OHIO AUXILIARY SOCIETY OF THE INTERNATIONAL INSTITUTE.

MAY 20, 1885.

Alfred E. Watkins, South Orange, N. J., Mr. R. Courtenay, Bombay, India, Rev. A. Buchanan, Jamestown, D. T., Rev. Dr. Giesey, Washington, D. C., and E. C. Whittlesey, New London, Ct., were elected members.

Mrs. A. M. Searles read her translation from a French work by M. Lecoindre, pointing out the location of the resting places of the Israelites in their journeyings under the leadership of Moses.

An editorial from the Buffalo *Courier* ridiculing the work of the International Institute, and especially the proposed expedition to explore the Pyramid, was read by Mr. Latimer.

Letters were read from Alfred E. Watkins on the Egyptian expedition, and from Lieutenant Totten.

Lieutenant Totten has recently lectured on the Pyramid before the St. Anthony club of New York, mainly composed of Columbia college men, who are advocates of the metric system. After discussion on various subjects, the society adjourned for two weeks.

JUNE 3.

Henry Pierrepont of Brooklyn, N. Y.; Lieutenant Colonel Fraser of Trichinopoly, Madras; R. J. Kelly of Georgetown, Demerara, and Hon. William Bross of Chicago were elected members.

A letter was read from Lieutenant Colonel Fraser, R. E., Madras, India, in which he says "Egypt has not lost importance. Nothing can be done in the present state of the river; but, depend on it, some attempts to divert the Nile will completely alter the condition of Lower Egypt, and events obscure to most of us, but clear to prophecy, will take place—the drying up of the Euphrates—the way of the kings from the sun risings—the highway from Egypt into Assyria have to be understood.

"The influence of America on the eastern question will, I think, be very sensible, and nowadays communication is so very rapid that the descendants of the ten tribes, wherever scattered, form one vast Protestant people. We have in the working population of India the old Egyptians and Chaldeans, who are allied in race to those who built the tower of Babel and the Great Pyramid. In the higher castes there are representative Egyptians and Babylonians who have preserved science in such a way that is imperfectly known to Europeans.

Professor C. Piazza Smyth wrote: "Some time ago I saw a proposal to make Great Pyramid measures very abstruse and complicated because it was said the French metrical standards were so, and had great advantage on that account for measurements in electricity and chemistry as well as in mechanics. I maintained that the French mechanical standards were no more applicable to measuring and describing electrical and chemical actions than the English or any other mechanical standards of measure; besides which, mechanical standards were far more important in a national point of view, because used by the whole body of the people, than any curiously refined measures in the refined laboratories of a handful of scientific men. And now I see a similar idea expressed at the royal astronomical society, London, with respect to time arrangements." Professor Smyth then quoted from the address of Captain Wharton, who counselled the society that if any change was made in time it would, unless it was done cautiously and after considerable

notice had been given, cause disaster. Letters were also read from Mr. R. Courtenay, F. A. R. Winter and Professor H. L. Smith.

Rev. H. G. Wood then delivered his address on "The Temple Vision of Ezekiel."

At the close of the meeting a vote of thanks was tendered to Mr. Wood for his interesting and instructive lecture.

JUNE 17th.

J. N. Ashburn, Cleveland, O., George H. O'Donel, Jabalpur, India, J. M. Walter, Youngstown, O., M. D. Harter, Mansfield, O., and Mrs. Margaret Dunham, Collamer, O., were elected members.

Communications were received from several members. Lieutenant Colonel Fraser of Madras, India, wrote: "It appears to me that the International Institute could give its objects wide effect by bringing out under its auspices English and American editions of sets of tables for readily converting metric into Pyramid and Anglo-Saxon measures, arranged in three columns, the former in legible italics and the latter in capitals.

"There are plenty of tables in engineering pocketbooks for turning Anglo-Saxon into metric figures, but those, like myself who reckon in grains and feet, have to go to some trouble in reducing grammes and centimetres to terms they can understand at sight.

"The science of electricity, new within the last few years, has been appropriated and drawn within the metric vortex, from which it has to be extricated by earth commensurable units that will retain an Anglo-Saxon form."

Letters were also read from George H. O'Donel, Jabalpur, India, Arthur R. Granville, London, England; Charles De Medici, New York, and other United States members.

Mr. W. H. Searles then delivered an address on the recent work of Mr. R. Courtenay, "The Two Witnesses," and illustrated it by diagrams. At the conclusion of the meeting a vote of thanks was passed to Mr. M. H. Searles for his valuable address.

JULY 1, 1885.

George H. Burrows, Cincinnati, O., and George Thomas, Oshtemo, Mich., were elected members. The president acknowledged the receipt of a pamphlet from Lieutenant-Colonel A. T. Fraser, entitled "Darkness in the Land of Egypt and Light in the Dwellings of the Children of Israel" and a book of poems from George A. Hammond, of Kingsclear, New Brunswick, "Queen Victoria's Olive Tree and other poems." Extracts were read from a pamphlet containing the proceedings of a meeting of civil engineers of London, England, with a discussion of the paper by Arthur H. Smythe, "A comparison of British and metric measures for engineering purposes." The papers of Mr. J. H. Weldon of Kilmallock, Ireland, on the reverse and obverse of the great seal of the United States were then read. After the papers Judge McMath rose to reply. He considered that Mr. Weldon was in error in attaching religious significance to number thirteen in the seal. The thirteen referred to the colonies and not the thirteen tribes. He said that the eagle held in his talon six arrows and not thirteen. He considered that strictly speaking the United States of America had no seal. That when the seal was devised there was no properly organized government, and that Congress did not adopt the seal until the 23d of September, 1779. The President and secretary make the impression of the seal on documents, but they cannot as in England affix the seal, though an expression is used. He considered that the use of the seal arose in times of ignorance when persons in authority were unable to write their signatures to documents, and that the seal was not a sign of civilization, but a remnant of barbarism.

Mr. Latimer in reply said that he considered that there was a government previous to the adoption of the constitution. He claimed that the government began on the 4th of July, 1776, or perhaps on the 7th of September, 1775, the date of the first prayer in Congress. He said that if we have no seal we have no flag, the flag was adopted the 17th of June, 1777. The government of the United States had begun and was a government long before the adoption of the seal or the flag. He said that the seal was not an emblem

of ignorance, but was on the contrary a token of authority to be venerated. Signatures could be counterfeited, but as the seal was not permitted to be copied, it could not be counterfeited without great expense. He said the seal was used in early times when the art of writing was unknown, and cited the case of King Ahasuerus, when the decree was made against the Jews and sent to the rulers of every province according to the writing thereof, and to every people after their language. It was written in the name of King Ahasuerus and sealed with the King's ring. After some discussion a vote of thanks to Judge McMath for his able address was unanimously adopted, and the society adjourned for two weeks.

EDITORIAL NOTES.

Pyramid students believe that the grand gallery in its measures of an inch to the year is an epitome of the history of the Christian dispensation, and the measurements pointed to a great event in 1881. Their ridiculers, led by Mr. Proctor, asserted that Piazza Smyth and his followers had set their faith on the end of the world in that year, whereas they were looking forward to a crisis in the history of Anglo-Saxondom, and they believe that events in Egypt are fulfilling the prophecy which the measures indicated. In former days the Americans might have viewed the increase of British power with envy. To-day that feeling has almost vanished from our people, and we have lived to love and honor our British brethren and to applaud their success when it is obtained by right.

This episode of Anglo-Egyptian history has been wonderful, thrilling as a tale from the *Arabian Nights*. Looking at it from our standpoint we have seen from the beginning that England was sent into Egypt as a great savior, and that she is fulfilling the prophecy of the 19th chapter of Isaiah. She has entered her inheritance, that which formerly belonged to her; that in which we as Americans are deeply interested. While we have wondered at what we may call the color blindness of Mr. Gladstone, his utter ignorance seemingly of the prophetic side in the grand questions touching the occupation of Egypt, yet we have seen that he has been an instrument in the designs of Providence to show that God guides the affairs of the nations. He reminds us in some respects of that wonderful

prophet of the east, Balaam, who was forced to move in a direction contrary to his own will. Far be it from us to criticize unfairly the act of one of the grandest of England's statesmen; perhaps he has prevented by honorable means a disastrous war, such as must have ensued if he had given a hasty judgment at the critical moment of the negotiations between Russia and England. We understand the difficulty of guiding the ship of state through the breakers, and our sympathies and prayers are with Gladstone and his successor, and with our brethren in Britain in the glorious work which Providence has given them to do and which they will accomplish if not with some great statesman, then with some poor statesman whom the Lord will raise up to confound the wiser ones.

To the educators of Anglo-Saxondom who are ignorantly trying to force the metric system upon the youth of the country:

How can you, as good citizens and heirs of the wisdom of past ages, attempt to overthrow the weights and measures that have been handed down to you from time immemorial. If you can say that you know what you propose to give up in order to accept a foreign measure, you do it intelligently. Ask yourselves, therefore, this question. Do we understand the origin of our own weights and measures? Have we studied their antiquity, their relation to the cosmos? Do we understand what we propose to accept instead? Unless you can answer these questions affirmatively, you should be ashamed to profess to teach the youth of this country. You are following closet philosophers, and many of you have not the slightest knowledge of what you are doing, and do not know the difference between the decimal system and the French metric system, but think that the metric system means the decimalization of our own weights and measures; whereas you ought to know that the acceptance of the French metric system implies the utter overthrow of the Anglo-Saxon. You might as logically propose to substitute the French language for your mother tongue, and if you can read the signs of the times you must know that An-

glo-Saxon is to be the language of the world. You propose to give up your birthright without inquiring what it is. You are as bad as Esau. Do you know that there were hundreds of thousands of arrests and fines in France to enforce the French metre? Do you know that the same class of men who compelled its adoption burnt the Bible, thinking that they could destroy the Divine evidence of the origin of our weights and measures by destroying the book? Do you know that the advocates of the metre in England sought to make the use of the existing system a crime? As evidence of this, look at the penal clauses in the bill brought before the British parliament on the 24th of February, 1868.

"From and after the expiration of years from the passing of this act, the imperial and all other local or customary weights and measures shall be abolished, and every person who shall sell by any denomination of weights and measures other than those of the standard metric weights and measures, or such decimal multiples or decimal parts thereof as are authorized by this act, shall, on conviction, be liable to a penalty not exceeding a sum of forty shillings for every such sale."

"2. From and after the expiration of years after the passing of this act, if any person or persons shall print, or if the clerk of any market or other person shall make any return, price list, price current, or any journal or other paper containing price current or price list, in which the denomination of weights and measures quoted or referred to shall denote or imply a greater or less weight or measure than is denoted or implied by the same denomination of the metric weights and measures under and according to the provisions of this act, such person, or persons, or clerk of the market shall forfeit and pay any sum not exceeding ten shillings for every copy of every such return, price list, price current, journal, or other paper which he or they shall publish."

Some of you to-day insist upon a knowledge of the French metric system, being required for admission to your colleges. We beg that you will not put this upon your circulars till you have fully investigated this subject. We ask you who have not already stultified yourselves and given yourselves to the adoption

of this abortion of a measure, to study the question. And that you may have efficient assistance, we ask that you will take our magazine. We claim that it will repay you, not merely in the matter of weights and measures, but in that to which weights and measures lead, namely, an inquiry into the origin of race and language, science and religion.

People of the Anglo-Saxon world, hold to your weights and measures, hold to your Bible which proves them divine, spurn the false and Godless measure of the French infidel.

Mark the words of the late Abbé F. Moigno, of Paris, France: "Should the metre—absurd in principle (the ten-millionth part of the meridian, which varies in every part of the globe) wrong in its valuation or mensuration; expensive to an excess in its making; unmanageable, without being deformed; tyrannical and barbarous in its introduction—have been imposed on all countries, my sorrow would have been inconsolable."

Our thanks are due Mr. James Simpson, of Edinburgh, for copies of *The Scottish Geographical Magazine*, which contain much interesting and valuable information. We note specially an article on "The Egyptian Súdán" by Dr. R. W. Felkin, F. R. S. E.

REVIEWS.

'Darkness in the Land of Egypt and Light in the Dwellings of the Children of Israel, an Indication to Antiquity of the Prevalence of Light and Heat Throughout the Universe, and the Real Nature of Darkness, as well as the Existence of Obscure Forces Around us in Unperceived Strength.' By Lieut. Col. A. T. Fraser, R. E. Published in London, England, by Edward Stanford, Charing Cross.

The author discusses the subject of light in general with suggestions as to the phenomenon in the land of Egypt. He says that the quality of darkness which we suppose to be the most obvious characteristic of space, next to its apparent emptiness, may be only imaginary, and that research may show that the universe is composed and pervaded with light which only wants favoring circumstances to spring into soft illumination or an ardent flame.

The stars, so far from being merely the suns we think them, are the indications of light all about us which we cannot see, but which the Israelites saw in their dwellings in Egypt; of forces all around us of vast and unobserved power; and they are, thus looked at, the necessary vestibule of heaven.

We have received from Albert Williams, Jr., chief of division of mining statistics, United States Geological Survey, a report of the mineral products of the United States. This digest summarizes results which appear, in more extended form, in a volume entitled 'The Mineral Resources of the United States, 1883 and 1884.' Mr. Williams gives tables valuable for reference, showing the quantities and values of the different mineral products of the country for the past three years. From these it appears that the total value of the metals and minerals produced in 1884 was \$39,100,008 less than in 1883, and that the decline in 1883 from 1882 was \$3,012,061; that is, the falling off

in value began on a small scale in 1883, but was accented in 1884. The net decline has been due rather to a depression in price than a decrease in quantity; indeed, several important substances show a decided increase in production, notwithstanding the general dullness of trade. The overproduction, taking the whole field into consideration, has been less than was generally feared.

We have received, through the kindness of Prof. Piazzì Smyth, a pamphlet by George H. O'Donel, head master of the mission high school, Jabalpur, India. It treats the interesting prophecy of the seventy weeks, and contains the concise results of Mr. O'Donel's computations. This paper investigates the inference, drawn from the astronomical calculations with brief explanatory notes of Sir George B. Airy, late Astronomer Royal, that the date of the crucifixion is Friday, April 7, A. D. 30, or (if A. D. 30 be rejected as too early a year), Friday, April 23, A. D. 35.

OUR REST, a monthly paper devoted to the subject of Christ's Second Coming, and preparation of the church for that event.

On account of the extreme depression of business and scarcity of money, this valuable and interesting paper has been suspended in its publication a few months. It has been resumed with the June number lately issued. We can recommend it to our friends, as it has devoted much of its space to the position of the Great Pyramid, and of advocating the identity of the Anglo-Saxon race with the lost tribes of Israel. It is edited and published by C. H. Jones, 77 Clark street, Chicago, at \$1 per annum.

QUEEN VICTORIA'S OLIVE TREE AND OTHER POEMS, by George Arthur Hammond of Kingsclear, New Brunswick, Canada.

To the twelve-tribed house of Jacob, some of whom are known as JEWS, others hidden away as ANGLO-SAXONS, another

name for God's chosen people, these pages are dedicated by a native of Canada, a descendant of one of those adventurers who landed in Plymouth on December 11th, 1620, from the Mayflower. The poetry is good, the themes very interesting, unfolding the history and prophecies of the lost sheep of the house of Israel, the ten lost tribes in their past, present and future glorious destiny, as revealed in the Only Wonderful Book. We have been much interested in reading these fine poems, and will give extracts in a future number. London, (Eng.) printed and published by Robert Banks Racquet Court, Fleet street—and may be had of the author. Price 30 cents.

BLIND SIMEON'S PRAYER IN THE TEMPLE. By George Lilwall. Published by Guest & Co., 29 Paternoster Row, London, England. Eleven pages. Price three pence.

"Lord, now lettest Thou Thy servant depart in peace, according to thy word. For mine eyes have seen Thy salvation. Which Thou hast prepared before the people; to be a light to lighten the Gentiles, and to be the glory of Thy people Israel." A concise and able treatise, showing the literal fulfillment of the New Testament as well as the Old Testament predictions in regard to Israel (not Judah, or the Jews) as foretold by patriarchs and prophets, as set forth in the life and ministry of the Messiah, as indicated in the teachings and labors of the Apostles—as indicated by the predicted return of the Jews (Judah) to Palestine, in company with representative detachments of Ephraim and Manasseh—or in other words with representatives of England and America.

MOERIS—THE WONDER OF THE WORLD. By F. Cope Whitehouse, M. A., New York John Wiley & Sons. Fifteen pages.

A very interesting account of a great basin, to utilize to the utmost the annual overflow of the Nile, by converting a vast extent of low deserts into an impounding reservoir, to receive the overflow and distribute it for irrigation. This was regarded during the entire thousand years of Greco-Roman history as the most stupendous of the engineering works of the world. It

was not only of marvelous ability, but also planned on a scale of unique and incredible grandeur, and executed by the labors of successive generations. As a fitting monument of this immense undertaking, two pyramids were constructed on an island near the middle of the lake. Their summits rose 300 feet above its surface. Their base, however, lay 200 feet below the level of the Mediterranean and in nearly 50 fathoms of water. One-eighth of a mile high, they outranked all the other pyramids of Egypt, and were as far above the level of the bed of the lake as the present apex of Cheops is above the valley of the Nile. Such was the unanimous statement of antiquity from Herodotus to Hassam Ibn-Isaac, from B. C. 434 to A. D. 700—"It was situated 70 miles southwest of Memphis." "It was as Diodorus said, the most gigantic as well as the most unselfish creation of royal will, where successive monarchs had guided the energies and expended the resources of their subjects to the greatest advantage—considering the benefits and advantages brought (by this great work) to the government, none could sufficiently extol it. For seeing that the Nile never kept to a certain and constant height in its inundation, and the fruitfulness of the country ever depended on its just properties, the king dug this lake to receive such water as was superfluous, that it might neither immoderately overflow the land, and so cause fens and standing ponds, nor by flowing too little prejudice the fruits of the earth for want of water. To this end he cut a canal along the river into the lake eighty furlongs in length and 300 feet broad; into this he let the water of the river run, and at other times diverted it and turned it over the fields of the husbandmen, at seasonable times, by means of sluices, which he sometimes opened, and at other times shut up, not without great labor and cost (some \$50,000.)"

This lake continues to the benefit of Egypt to this day, and is now called the Lake of Myris, or Meris.

THE RESTITUTION, issued weekly by the Christian Publishing Association, Plymouth, Indiana. Terms, two dollars per year, payable in advance.

'The Coming Age: Its Nature and Proximity.' Price \$3.00. Send to C. H. Jones, 77 Clark Street, Chicago, Ill.; to the Restitution, Plymouth, Ind.; or to J. P. Weethee, Millfield, Athens County, O.

'THE GOSPEL ACCORDING TO ST. MATTHEW.' Translated from the Greek text of Constantius De Tischendorf and other standard textual authorities. By Charles Gardner, M. A. Printed on extra heavy, tinted paper, elegant cloth binding. Post paid, only sixty cents. C. H. Jones, 77 Clark street, Chicago, Ill.

'The Number Counted 666, and the Name Counted 888.' By the Rev. James Upjohn. These books investigate the numerical value of names in the Hebrew Scriptures; they are companion volumes, price one dollar each. They will be sent postage paid by remitting the price to Rev. James A. Upjohn, Neenah, Wisconsin.

'The Waters Above the Firmament, or the Earth's Annular System.' Address Isaac N. Vail, Barnesville, Belmont county, Ohio.

The Messenger—A weekly journal devoted to the elucidation of prophecy and the identification of the British nation with the house of Israel, God's chosen people, his inheritance. Edited by Annis Unwin, 84 Oxford street, Sheffield, England, and published by John Heywood, 11 Paternoster buildings, London, E. C., England. Yearly subscription, 10s. 10d.

The Banner of Israel—A weekly paper advocating the identity. Edited by Philo Israel and printed by Robert Banks & Son, Racquet court, Fleet street, London, E. C., England. Annual subscription for one copy weekly, including twelve double numbers, post free, 7s. 6d.

Israel's Hope and Destiny—This magazine, which has been published for five years as a monthly, will henceforth appear as a quarterly. It advocates the identification of the Anglo-Saxon race with the house of Israel. The editor is Douglas A. Onslow, J. P.; publisher, Robert Banks, Racquet court, Fleet street, London, England.

RECEPITS FROM SUBSCRIBERS TO "THE INTERNATIONAL STANDARD" FROM MAY 19
TO JULY 19.

May 20th.—Lieut. W. L. Buck, \$2.00; S. A. Chaplin, \$2.00; Dr. G. W. Copeland, \$1.00; D. G. Lang, \$2.00; J. F. Ryder, \$2.00; J. E. Hilgard, \$2.00; Dr. W. J. Scott, \$2.00; Geo. P. Burwell, \$2.00; C. H. Strong, \$2.00; Henry Wick, \$2.00; Wm. Ritchie, \$2.00; P. S. Ross, \$2.00; Dr. F. M. Robertson, \$2.00; Lieut. Col. A. T. Frazer, \$3.43; F. W. Newman, \$2.00; August Mordecai, \$2.00; Chas. T. Seymour, \$2.00; H. H. Tibbals, \$2.00; Thos. Wann, \$2.00; Mrs. E. Bedell Benjamin, \$2.00; Rev. M. L. Streater, \$2.00; R. Courtenay, \$2.38; Rev. J. H. Hopkins, \$2.00. Total \$46.81.

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Mr. F. A. R. Winter, of Demarara, British Guiana, writes us that we have made an error in our monthly receipts for March. Instead of F. A. R. Winter \$7.50, read, J. R. Bryden, \$4.00; R. J. Kelly, \$2.00; F. A. R. Winter, \$2.00, less commission on foreign bills, fifty cents.

THE
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STANDARD

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IN THE

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SEPTEMBER, 1885.

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BIBLICAL ASTRONOMY.

It has been noticed in all ages, that the imagery of the Bible is largely based in a science of the stars that has been little understood even by scholars in modern times. That it was tolerably well understood by religious men in many lands before the barbarian invasion and the dark age of our dispensation, there can be no rational question. And even in that very age some knowledge of it was preserved among church writers; so that Picinus, on emblems, has transmitted to us the received sense of several groups among the stars, so that their original significance has never been entirely lost, and the recovery of the whole system of the celestial signs within about a century by such savans as Ghebelin, Dupins and Drummond, both in Europe and America, is not the miracle it might seem to one not previously acquainted with the history of astronomy as a vehicle of theosophical ideas in all past ages.

Still we must go to the men of remote ages for a correct idea of the religious use of astronomy in the times when our Scriptures were preparing; that is, from the first man all down to St. Paul and his cotemporaries. By this means—by their recorded testimony—alone can we show whether the Christian fathers were right in their notices of the old sacred emblems wherein

astronomy has its part, or whether they wrote out merely by their own fancies, or notions not well sustained that were correct in their day; also, whether certain authors in later times have given us a correct account of the astronomical enigmas and emblems whereof they treat. There are two methods whereby this question may be determined. We may begin with the earliest known authors and notice how they use astronomical figures when they have occasion; or we may first enquire, did well-instructed religious men in the Apostolic ages allow that, from remote ages astronomical forms had authoritatively been assigned to religious ideas? If they unanimously declare this to be the received view, there is an end of all controversy, and their testimony must be accepted as final.

Of all that we might cite to show the religious use of astronomical symbols, the two that are at the same time best qualified to testify in the case, and are most accessible to ordinary readers, are Josephus and St. Paul, both cotemporaries, both among the highest religious authorities of their times, and both in possession of every family where correct religious information of the highest importance to the right interpretation of the Scriptures is at all desired.

Josephus, in his 'Antiquities' and in his 'Jewish War' (Ant. 3, 7, 7; War 5, 5, 5), affirms that in the altar service of the Jews everything coincides with the teachings of the celestial sphere; and he makes of this fact a reason why the nations in general should not dislike the Jews and their religious service—since the same thing is true of the altar service among the Gentiles everywhere. This ought to settle the fact that the doctrines and facts involved in the service of the Hebrew altar were also indicated in the aspects of the starry signs, since Josephus was himself a priest in the highest rank next the Pontiff himself, and must have known what he affirmed to be true. So long, therefore, as his testimony goes uncontradicted, it must stand as the current view of the best and most competent men of his time. But you say this Josephus was a Jew, and is notorious for his flattery of the Romans; so that his testimony to facts of this kind is of little worth. Why is it, then, that he was left uncontradicted upon this point by the heathen

writers of his day, who all showed themselves over-inclined to deny the fact of his historic studies in general? The answer must be that they knew his statement of fact concerning the altar service to be correct in every part. If so, then the doctrine of expiations must have been recognized as taught among the star emblems of the sphere by all people alike, by the "Jew first and also by the Greek." This is witnessed in Aries Chrysometillus, that Abarbinal, the last of the great Jewish rabbis of the middle ages, allows to be for the whole world what the paschal lamb was to the Jews at its first institution in Egypt—a sacrifice and expiation for the saving of such as were otherwise in danger of death.

But the authority of Paul, I suppose, will not be disputed among the Christians; and what does he say? In his epistle to the Romans (x, 18) he argues that all nations had in reality known the Gospel from the beginning of the world, though all had not obeyed the Gospel, even among the Hebrews, the most favored race among men; and all this from the words of a certain psalm rightly attributed to the first man, wherein it is said of the heavens, in their partitions (Mesaparin): "Their line is extended out over all lands, and their signs* unto the end of the world."—(Ps. xix, 4). In turning to the psalm itself we find it a record of the warning of the first man (v. 11, 12), while he had not yet sinned (v. 13, 14). In its opening he begins by saying: "The heavens in their partitions declare the glory of God, and the expanse showeth His handywork." The glory of God is but faintly shown by the mere sight of a few stars, without regard to their disposition in groups. His wisdom and goodness are best shown to the common mind of man by His works upon earth, in the forms and functions of animals and plants, in the balancing of forces and the adaptation of parts; all exceedingly wonderful and infinitely complex in their ramifications over the whole field. But Messiah manifested is the glory of God; and His handywork is the redemption of man and his guarding the universe from the power of evil broken forth and raging upon the earth. But the author

* The original may be rendered either "words" or "signs;" among these signs (not among the words) is set the tabernacle of the sun.

proceeds: "Day unto day uttereth speech, and night unto night showeth knowledge. There is no speech nor language;" their voice is not audible. "Their line is gone forth over all lands and their signs unto the end of the world. Among these hath he set a tabernacle for the sun, which is as a bridegroom coming out of his chamber, and rejoiceth as a strong man to run a race. His going forth is from the end of heaven, and his circuit is unto the ends thereof; and there is nothing hid from the heat thereof." Here we have the very heavens in their divisions showing the glory of God; and this is identified by St. Paul with proclaiming the Gospel to every creature under heaven (Col. i, 23).

The proof is therefore perfect. St. Paul saw the Gospel indicated in the stars, in their partitions, in the succession of their signs as they rise, culminate and decline toward the west.

The gospel of the stars then is no invention of ours. It has been indicated in the celestial signs, and the course of the sun and planets among them from remote ages. We rightly attribute the words of our Psalm to the first man. In another, quite as probable after his fall and his reclamation (cxix.-89 91), we read "Forever, O Lord, thy word is settled in heaven, thy faithfulness unto all generations; thou hast established the earth and it abideth. They continue this day according to thine ordinancy; for all are thy servants." So in the epic of Job, that we rightly attribute to Noah immediately after the deluge, since he refers to nothing later than that catastrophe, we are told of the ordinances of the heavens whose dominion is to be set in the earth; and the enquiry is made, "Canst thou bind the sweet influences of the Pleiades, or loose the bands of Orion? Canst thou bring forth Mazzaroth with his seasons? or canst thou guide Arcturas and his sons? Knowest thou the ordinances of the heavens? Canst thou set the dominion thereof in the earth?" These things can God do and not man. Mazzaroth, or Mazzaloth, the presagers, the instructors of men in things to come, have always been put for the twelve signs of the Zodiac. In no author of any respectability have they had any other sense. Piscinus also tells us that Boötes and the Bears are Arcturus and his sons. Between these

men turned into bears by infernal magic, is the tail of the Dragon or the Great Serpent that is uncoiled and springing upon man (Arcturus—Boötes) below, but he is paralyzed by a blow from the foot of Herakles, the son of the whole circle of heaven; that the Greeks make to strangle two serpents while in his cradle—the one being this polar serpent, and the other the infernal Cerebus, the guard of the dead from below. The two bears also, Picinus informs us, are named and put for Cain and Abel; making Arcturus the first man; as is Cepheus, or Kaikaus upon the opposite side of the pole. But Cain and Abel are only representatives of the race. Cain is Ursa Major below the tail of the dragon, thus standing for that large portion of the race that live under the power of an evil conscience; while Abel, as figure of that small company who live above the world though yet in an imperfect state, is put for Ursa Minor above the tail of the dragon.

At this point comes in the structure of the Great Pyramid; and we find the downward passage so directed that 2170 years B. C. the old pole star in the tail of the dragon would have looked directly down its centre to the unfinished pit below, if it were then standing, while the Pleiades in the neck of Taurus were on the meridian; these Pleiades being probably put for the seven ages of man before the opening of the millenium of peace. Thus, could we prove that the Pyramid was built before the deluge, as has been commonly held, we could show a strong presumption that the builders were endowed with either a spirit of prophecy or a correct knowledge of mechanical astronomy, and know that such an aspect of the stars would occur at a certain point that we name 2170 years B. C., or 6 x 9 years before the birth of Abram by our best tables, an event of great importance to the future development of the race; though at that time Egypt was held by an idolatrous people, whose priests, it is said by Josephus, that Abraham confuted when he taught them astronomy and arithmetic (*i. e.* sacred astronomy and numbers used artificially, or mystically) of which they were before ignorant or misinformed, for idolatry is in its leading idea a perversion of the Sacred Astronomy, which is taken up altogether with the way of Messiah in the world of life and man in the world

of the apostasy; and the oldest known idolatry is an undue knowing of certain imaginary beings held to preside over the celestial signs as ministers of the Supreme Deity.*

Having thus shown from undoubted authorities that the most advanced men in the apostolic age attached a profound religious significance to the celestial signs, we may now go back and show how the more ancient authorities treated them. In Isaiah (xl., 26) it is said "Lift up your eyes on high, and behold who hath created these things, *that bringeth out their host by number: he calleth them all by names* by the greatness of His might, for that he is strong in power: not one faileth." Here we have at least a rational explanation of the fact that none else but one divinely informed can tell us when and by whom were the celestial signs and their leading stars named: when and by whom were they hosted and arranged in their order, each in its proper place, so that in their combined effect they should indicate the Gospel that we find written out in words in the later Scriptures: for the earliest Scriptures on earth are later in time than the revelation of the celestial signs, the eldest being an account of these as preëxisting; and letters themselves are but secondary forms of the signs upon the sphere.

The idea of the earth itself, as created and controlled in accordance with the indications of the sphere, is also presented in Isaiah li, 16, when it is said: "I have put my words in thy mouth, and I have covered thee in the shadow of my hand, according to the division of the heavens and the founding of the earth, even saying unto Zion, Thou art my people."

We have thus far confined our examination to general terms, but before giving account of ancient usages, we must first note how the heavens may be partitioned into sections. The first division to be noted is that of the plane of the earth's equator, which divides the earth into upper and lower hemispheres, whose poles are ninety degrees distant from the equator on every side. Thus the ecliptic passing through the twelve signs of Zodiac cuts twice at opposite points, and at an angle of twenty-three and one-half degrees. Cutting both the equator and the ecliptic at opposite points is a star circle named the

*See Maimonedes upon Idolatry, cited in Cudworth I. page 618. Andover Ed.

Galaxy, and by mistake the Milky Way, which, in passing from the vicinity of the north pole round through the lower hemisphere back to same pole again, cuts four groups of constellations, so that in the Ecliptic and Galaxy systems are sixteen groups of signs. South of the southernmost of these are other signs, as the Cross of the South (supposed to be the Cross of Ixion,) the star Achernar in the star stream named Styx by the Greeks and Italians, supposed to represent Tantalus, lip-deep in water that he cannot drink, and the bright star in what is properly called Charles' Oak, once the eye of the vulture that they say tore the liver of Tityus; besides which are a few others not distinguished upon modern planispheres. This region, near the southern pole, has but few stars at all bright, though it is surpassingly rich in telescopic objects, nebulae, etc. It was held to be forever dark in the system that treated Sion (or the north polar region) as always light; and it was made to represent the punishment of the incorrigibly wicked, and was one of the regions named the outer darkness, the other being external to the circle of the stars.* In Virgil (Geor. I, 240, 243) the mountains on the north (whatever they may have been) are put for the north pole of the earth, while the south looks down upon the black Styx and the deep down Menos in the almost starless firmament of that quarter.

The upper hemisphere of the heavens, then, is put for the world of life, while the lower is correspondent to the world of death: the region about the north pole is called Paradise or Heaven, while that about the south pole is put for the lowest hell. In Hebrew here are the *hadre teman* or the chambers of the south.

The twelve signs in the Zodiac correspond to the twelve degrees of Messiah in the world of life. These are (1) his eternal generation; (2) his appointment as Lord and Judge from eternity; (Prov. viii, 23); (3) his bearing up all things at the creation; (4) his beginning to destroy the malignant powers, when they appear; (5) his beginning to save them that hide with him, and the universe with them, from falling under the power of corruption; (6) his becoming man for the life and light of the world;

*See Lucian upon the Tartarus of Homer.

(7) his rejection and temporary exposure to the incursions of the rebel angels with his redeemed; (8) his offering of himself as an expiation for the sin of the world; (9) his resurrection and ascension among his foes; (10) his setting up of his sodality with the intent to draw into it all nations in due time; (11) his final defeat of the malignant powers that have retired from post to post as he has advanced with his redeemed; (12) his visible exaltation to supreme power in the judgment of angels and men that have sinned.

The four signs of the Galaxy system denote (1) the fall of man from his state of rectitude; (2) his passing through death under guard of his Redeemer; (3) the expiation of man and his deliverance from the incursion of the malignant powers; (4) his restoration to the bliss he has once forfeited by sinning.

Had we been witness to the march from Egypt to the Red Sea, or the review at Sinai, the encampment in the desert, the review at Pisgah, the crossing of the Jordan, or the battles of Joshua and his successors to Solomon, we should have seen for their ensigns certain forms for the twelve signs for twelve of the tribes that were to have landed estate in Palestine; while Levi (the thirteenth by the adoption of the two sons of Joseph in his place), had for his a sign (the altar) out of the Galaxy circle. So far as known from the Scriptures (Gen. xlix., and Deut. xxxiii., Josh. xv., 19), the Hebrew interpreters in the Targums, the Talmud and the great commentators, the order and forms of the standards may be thus described: *First*, Naphtali forms and marches beneath some representation of the sign Virgo that had been in the summer solstice from A. M. 400 till near the Exodus. It was with this sign that all the ancient peoples began to reckon the year until sometime not far from the settlement of the Hebrews in Canaan under Joshua, when all, except the Chinese, began to reckon from the first point in Aries. We know that for certain purposes the Hebrews did this from a passage in Joshua (xix. 34) where Judah is set east (that is above) Naphtali upon Jordan (the descending line), while upon earth Judah was the sixth tribe south of Naphtali; Leo (Judah) then was no longer in the summer solstice, as before the exodus. The ensigns were often (as here) named from

the tribes that bore them in their marches and battles and at their reviews.* *Secondly*, Asher marches under Libra, but what form of it is uncertain. The same is also true of Naph-tali. The most common form of Virgo is a woman holding in one hand a spike of corn or rice, and in another a palm branch, whence the sign is properly named Virgo. Azimech (Alma Hazemach) the Virgin and the Branch, a well-known title of Messiah among the Hebrews. (Isa. iv., 2, xi., 1; Ps. lxxx., 15; Jer. xxiii., 5, xxxiii., 15; Zec. iii., 8, vi, 12). In Egypt and the east we have a mother and child, and in China his toy is a globe and cross, because the world becomes his domain after his humanity has submitted to crucifixion. In India there are three heads of rice, and in Egypt there is Leo Sphinx over a serpent, for the hydra or fleeing serpent is below Virgo. In meditating upon Messiah imaged in the standard of Naphtali (Gen. xlix., 21), Jacob sees a noble stag born with broad antlers already grown. Moses (Deut. xxxiii., 23) seems to contemplate Messiah as a most favored youth entering upon labors and trials, full of courage and bound to achieve everlasting fame. "Possess thou the west (Leo) in the south:" (Aquarius) *i. e.* the west after the south; for glory is after humiliation.†

Then we should see the tribe of Dan by their thousands mov-

* A trace of this serpent is still preserved in the name *Sesuth* for the sting of Scorpio; as this noun is plural (originally Sishoth from Seshah) and this signifies pierces, stings or fangs. Two rather bright stars are in the tail of Scorpio that once represented these fangs, as the serpent was raising his head to strike the eagle if the arrow aimed at him in the next sign does not first transfix him. It was this serpent that Hosea had in mind when he said: "Where, oh Death, are thy fangs?" that St. Paul reads, Where is thy sting?—(Hos. xiii, 14; 1 Cor. xv, 55.)

† Charles Latimer has shown, that when this woman (Virgo) was "clothed with the sun with the new moon at her feet," several of the most remarkable events in modern times have had their inception. It would be well to look farther, if astronomers can find time to do so, and ascertain if older events of great importance have not corresponded with these in respect to the position of the sun and moon at their inception. From the terms of the prophecy in the Apocalypse it would seem that Columbus and Luther were not the first to have been found in this relation, and the Apostle in his vision was shown persons and events of a much earlier date: the woman flees twice to the desert, the second time upon wings as if she were to pass over the sea.

ing under the cherubic eagle holding in his talons a serpent.* The forms of this third sign are numerous, as its forms are complex. An elephant, or camel, as an animal strong to bear burdens, has once formed an emblem of Messiah bearing up all things; and the letter name of this sign is Gimel (for Gamel) a camel. It is here that the labors and conflicts of Messiah begin; and so here appears foes and obstructions; and these hint in what way the malignant powers oppose themselves at every degree of Messiah's progress; for here we are entering the world of the dying, and this—the sign of the autumnal equinox in the old sacred astronomy—is the house of death, as the sun passes through it into the lower hemisphere. Here a lion is to be killed, an eagle to be tamed and made servicable as a vehicle whereon the Mediator, or God, may ride over the heavens and thunder on his foes (Deut. xxxiii, 26. Ps. xviii, 10: lxviii, 4) Sometimes for this eagle there is a Pegasus, whose station now is in Aquarius. Among Egyptian emblems of this sign there is a man with snaky legs breathing fire and strangling a serpent in each hand. Again he is involved in the folds of an immense serpent up to the waist, while from his right hand goes down a thunderbolt upon his foes. He is bound to break through their fortified hold, that his redeemed may find the foe in full retreat downwards. This is the Tyre of Ezekiel's strange prophecy concerning the anointed covering cherub (xxviii, 12-19) and Tyre itself is a town, a fortress, an entrenched camp, &c., and so each of the signs may be called a tower, a camp, a fortress, a palace, a mountain, as well as a forest, a grove, etc., and in the legend of Samson, the spirit begins early to move him in the camp of Dan, he is preparing to become like Messiah in the sign of Dan, a hero warring on his country's foes. The latter form of this sign is a bold and wrinkled old man grasping with both hands by the middle an enormous serpent while he stands upon a scorpion. For this upon old spheres they sometimes

*The better forms of the sign Virgo Azimech indicate dominion or power: sceptres, scourges, an arrow, a man with extended arms, a bull's head, etc. Those of Libra are usually a house, a throne, a serpent paralysed by the touch of a rod, an enclosure, etc. The house is the temple of justice where he dwells that weighs the destinies and the rewards of creatures. Libra is held to be the Shaveh, or the king's dale in the Melchisedech legend; as it is the evidence of the Lord of all justice and truth.

substitute a man choking a serpent or two serpents each by the neck. In the east two ostriches are thus strangled. Upon the sphere the serpent with expanded jaws is turning back to sting his strangler; but that will not save him; he must die. Hercules strangling Antæus by the loins is a form of this image.*

After Dan we should see Manasseh moving under a horseman, or centaur; and this is our fourth sign. In Hebrew he is called Zidon, the huntsman (Gen. xlix, 13) or Ramah (Arabic Ramih) a bowman or shooter, and he aims an arrow upon the scorpion, as once upon the serpent that was raising his head to sting the eagle that held him in his claws. The letter name of this sign is Daleth, a veil (the doorway of a tent) a gateway to an enclosure, etc. This name must have been given in the very first age, for by A. M., 400, it ceased to be the gate of the sun to the lower hemisphere, the equinoxes then passing out of Gemini and Sagittarius into Taurus and Scorpio. By astronomical notices through the precession of the equinoxes we can determine times with some precision. Thus we know that from about 5,600 to 7,740 years since the equinoxes were in Gemini and Sagittarius, while the solstices were in Virgo and Pisces; and so, back of the Tauric periods, we find the Centaur born in clouds and the Gemini lords of tempests; both facts indicated that these were stormy or equinoxial signs, and that man was then upon earth to observe them and be endangered by their influence. Still the current allusions are to Orion and the Kids and Scorpio as tempestuous signs, while the Pleiades were watery signs in the spring—in the time of vernal equinoxes; the current sacred astronomy being that wherein Taurus led the year, and this all the way down at least to the time of the Advent (see Virgil Geor. i, 218) after which all grand, serious writers cease and all is sectarian controversy concerning creeds and philosophies and superstitious observances for more than a thousand years; and until our own times little notice was taken either of the Gospel in the stars, or of the true interpretation of the books that contain it on earth.

*The letter forms of this sign are usually scourges, arrows, a serpent paralyzed by the touch of a rod, a sting, a battle-axe, a camel's head and shoulders and forefoot, etc.

We have now reached the opening of the second cherubic period; * the first ending with the eagle over the serpent, now a scorpion, and its bright red star, now named Antares, the breaker through: † once Shiloh (Arabic Shuleh) the flinger of darts, or thunderbolts (Deut. xxxiii, 2) Saish, the Treader-down, the Lion, or Leshem, one that licks or rasps his foot with his tongue, as does a lion. The three other cherubic sections close with Aquarius, Taurus and Leo; and each of these has its particular bright star, these four being about ninety degrees apart, and named the Four Kings in the East. It is to be noticed that as the way of Messiah begins with Virgo, that has also its bright star, Spica or Azimech, and goes round to Leo, so his third, sixth, ninth and twelfth degrees are marked each with a bright star. Those in Scorpio, Taurus and Leo are red; that in Aquarius being pure white, like Spica in Virgo. The ancients held that Messiah takes all the forms of the Cherubim, as his adversaries before him have taken various forms, that he subdues one by one, and sometimes at least takes their forms, as it was customary among the ancients for the conqueror to array himself in the armour of the foe he had vanquished, or to take his shape and name, or some name suitable for the occasion. Hence Messiah was represented, and in certain places honored, under the figure of a serpent, a lion, a bull, a goat, a ram, etc. One of his figures, therefore, in the wilderness, was the brazen serpent upon a cross, as a sign that through the cross the serpent was to be killed; and the same was meant by a serpent paralyzed upon the wand of Esculapins, or the two upon the dove-winged cross of Mercury-Hermes; and among letters, serpent pierced with arrows or spears, or paralyzed by the touch of rods, are common in both east and west.

But when the tribe of Zebulon appears we should see a ship setting sail over sea. Here the Proteus of the rebellion has

* A cherub is the bearer of a mighty one (Carrab); and so God rides upon a cherub (Ps. xviii, 10), and the cherubim are bearers of the chariot whereupon Jehovah is represented as riding in the visions of Ezekiel. The letter forms of this fourth sign are a curtain, or veil, a flag, a gate-frame, a bar upon which a curtain is drawn up at the corners, a gate, etc.

† All astronomic names were once Hebrew, and most are still Hebrew, though the most are corrupted by Greek or Italian, and later by Arabic usage.

taken the form of waters, after appearing as a lion, or eagle and a centaur to stop the way altogether ; but, as the lion has been killed, and the eagle and the centaur have been tamed and made allies to the advancing Mediator—God—so here the divine Proteus* turns himself into a ship (some say into a leviathan or huge fish), as on our spheres we have fish with the head of a goat and will bear his companions safely over the waters to the shore beyond. This sign is in the south when Judah is cast from Naphtali and upon Jordan : (See under Naphtali supra) *i. e.*, it is then in the winter solstice, as was Aquarius before the Exodus. Both Jacob and Moses (Gen. xlix, 13 : Duet. xxxiii, 18) perceive in the ensign of Zebulon a ship setting sail, having Zidon (Sagittarius) astern. Jacob upon his deathbed gives ensigns to his sons, and speaks as an Asiatic ; Moses sees them pass in his last review, and speaks as an Egyptian ; both meditating upon the Messiah as imaged in those ensigns, and what shall be the outcome of his conflict with the malignant powers, not under the theocracy (if Jacob speaks true) but in "The aftertime of days:" *i. e.* in the times of the incarnation,† (Gen. xlix., 1) and at the end of the world.

The letter form of this sign is often that of a city, or garden. Among the Egyptians one of its forms is that of a city walled all round and the gates closed, while a serpent watches above with bared fangs ready to strike. Another is a city, or garden with the gate thrown open, and perhaps removed altogether, and the serpent is gone. In the Hebrew and Syriac two walls are wanting, but that at the left is supplied by a serpent either coiled or slightly curved,‡ as if to show that heaven is opened and can no more be shut. That serpent, however, is the same that was represented in the brazen serpent of Moses. One of the exploits of Samson is to carry away the gates of Gaza in the presence of his foes ; as the Grecian Herakles carries away those of Gades ; both these names being the same in a form slightly different,

* *Poreth* () one that cannot be confined, that can break away from all bonds.

† The *aharith yamine* always has this sense among the Hebrews. Though not always among the infidel Germans.

‡ Our E forms—some of them very ancient—are from a landscape with two sharp summits behind an elevated wall. This is found now only in old Italian. The secondry forms are in both East and West alike.

and each signifies a strong place. Samson is put as a sign of Messiah in his strength; and Herakles is a shadow of Messiah among the heathen as Lord of the universe (*har-kol*) all religions being but one religion variously corrupted, or more or less perfectly reformed; and all sacred names are from a common source in the original sacred tongue; all languages known beside the Hebrew being so many dialects of it more or less divergent from it in form or sense, or in both form and the sense of particular words. In these examples we may understand why of the so-called gates of the sun one was in Capricornus and the other was in Cancer. In both the way is stopped by a field of waters; and this (certainly in Capricornus) was often represented by a city or garden closed.

Samson piles the gates upon the hill before Hebron (conjunctions), the lophos where Orion stands before the intersection of the ecliptic and the equator in Taurus, and waits for the expected coming up of Messiah from below. In other words, he opens the way to Paradise, drives from his place the foe that would hinder the dead from rising at the appointed time. (See under Ephraim farther on).

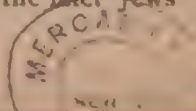
When the tribe of Reuben appears, their ensign is a man pouring water from an urn, or an urn marked with a cross. This latter is found upon a Hindoo Zodiac (Oedipus Judiacus Plate, ix) and among the stars, the cup of Aquarius—Aristaens (*har shatha*) the lord of the cup is really a cross with its principal stars in the form of a drinking vessel $\left(\begin{smallmatrix} * & \ddot{*} & * \\ & * & \\ * & * & * \end{smallmatrix} \right)$. The Hebrew name Deli (an urn or bucket) is still found upon our spheres, and to this or some figure spouting streams on every side (John vii., 38) Balaam refers when he says (Numbers xxiv., 7): "He shall pour water from his (*deli*) buckets, and his seed shall be in many waters."

Here we have the man of the Cherubim, and in his foot (upon one sphere in the mouth of a fish) is the second of the four kings, the bright white star named Tomahant; that is, probably, *yapha-ma lahatha*, the beautiful (Ps. xlv., 2) shall drink to fulness (Ps. lxxiii., 10); he shall be overwhelmed with sorrow—with floods of water (Ps. lxix., 1); the floods of Belial

(Ps. xviii., 4.) Some, as the Egyptians, say that he takes into his urn the waters of Eridanus that comes rushing down from the tophos where Arion stands (see under Ephraim farther on) and then pours them out changed to water of life. Others, as the Hebrews (Ps. ci., 7), say that he swallows down those floods, and then pours them out from various spouts on all sides (John vii., 38). The Persians held the same views, and their Rustam (*rosh-tam*, head over all) drinks up a river on his way to find and liberate King Kakons and his arm from the power of the White Daemon.

Near Aquarius are two horses cast helplessly upon their backs. One has wings; the Pegasus of the west; of the other only his head is visible. Both among the Greeks are the flesh eating horses of Diomedes, put for the bulls of Angeas (the glorious one) in another place named Orion, the Golden-clad. To these Messiah is supposed to refer in Ps. xxvii., 2, when he says that his foes stumbled and fell when they rushed upon him to eat up his flesh. Here appears fishes, in the east emblems of hatred. One is below the feet of Aquarius, and another is above his head. On one side is the fish-goat put for a ship in Capricornus (Zebulon), and a little beyond are the Zodiacal fishes and a horrible cetus or shark. Messiah is born in the midst of his foes; and so among the Gnostic laws there is a Hermanubis (an Egyptian form of him) surrounded by serpents, scorpions, crows or ravens, etc. Among the latter form of this sign was often a house, a tent, a tent pin, etc., as the humanity is the eternal dwelling of the Deity for purposes of manifestation to the senses no less than to the reason of intellectual beings.

Both Jacob and Moses (Deut. xxxiii., 6; Gen. xlix., 3, 4) in the ensign of Reuben perceive, or remind them of Messiah in his conflicts with the malignant powers; and Moses says of him: "Let Reuben live and not die; and let not his men be few." Jacob sees Messiah flung in a wrestle with the archangel, who for the moment has him under and is holding him down; and he says: "Reuben my first born art thou . . . unstable as water thou shalt not excel, because thou wentest up to thy father's bed." . . . In the mystic language of the later Jews



there are two Messiahs, the son of David (Matt. xxii., 42), who is a mighty conqueror, and the son of Joseph, who is sold to the Gentiles as a slave and raised from prison to supreme dominion (John i., 45), so there are in the elder terminology two Reubens; two first born sons: the archangel, the eldest and most glorious of created spirits, and Messiah—Immanuel, whose “goings forth” are from everlasting; the first being a leader with delegated power; the last in his own power as God destined to become man for the manifestation of God among all ranks of created spirits. Reuben also may signify, Obey the Son, be subject to him that has appointed either for a time or for ever. The archangel, appointed in his native dignity as the guardian of man in Paradise (Ez. xxviii., 14; Luke iv., 6), fails to recognize in his race, as their Paragon, a God-man, whose right to rule is unquestioned, and so rebels against the command “Let them have dominion” (Gen. i., 26), or “Let all the angels of God worship Him” (Heb. i., 6), and exerts himself to the utmost to prevent his coming and taking upon him the rule of all things. It is to this unreasoning, rash presumptuous, who has virtually attempted to assert divine prerogatives as his own, and so is said to have invaded his father's bed (Gen. xxxv., 22; xlix., 4; 1 Chron. v., 1), that the words of Jacob are directed; and he is told that his emblem is water, while that of his opponent is a rock, over which cataracts pour, or waves dash, only to be turned into foam and spray without moving it at all. His advantage is but temporary and must soon pass away forever.

ASAHEL ABBOTT.

[TO BE CONTINUED.]

THE DOCTRINE OF CHANCE APPLIED TO 888.

The Greek word for Jesus is made up of six letters, their numerical values being respectively 10, 8, 200, 70, 400 and 200, making in all 888. The Hebrew letters being numerals, it is not surprising to meet with this cumulative number in the Old Testament; but when we find it on the Messianic prophecies and types, and on passages harmonizing with, and illustrating the New Testament, we are led to believe that the Holy Ghost has cunningly inwoven the Hebrew text with the mystic number of Him who has fulfilled those prophecies and types.

God alone could have effected this coincidence, for the name, Jesus, was not known to men whilst the Old Testament was being written.

It is a translation into the Greek language of the Hebrew name, Joshua; and before being translated this name underwent changes; the original *Jehoshua* being contracted, in process of time, to *Jeshua*, then the last letter was dropped, and finally the Greek termination was added. Now all these variations, developed in the course of centuries, led to the name's reaching that form in which the letters count up 888. The leaving out, or the addition of a single letter would have been fatal to the combination. The name of the Messiah would not have been stamped on the things written of Him, and there would be no significance in the appearance of 888 on the text of the Old Testament.

It is proposed in this paper to apply to these appearances the test of the mathematical doctrine of chance, a doctrine so well ascertained, and so practical in its bearings, that it has been made the basis of one of the largest and safest branches of modern commerce—the system of insurance.

This doctrine as set forth by Mahan is as follows: "If we have, for example, 153 numbers before us, all taken as they happen to occur, there is just *one chance*, and no more, that one

of these numbers shall be 153 or a multiple of it. If it should turn out, therefore, that there are two such multiples, or three, or four, there is a proportionate probability that something more than chance has operated in the selection of the series, that there has been some intention to bring about the given result.

We will not look for a multiple of 888, but, what is a severer test, for the number itself. I take 153 references which will be found on pages 115, 116 and 118 under the heads '*Of the Incarnation and Nativity of Christ*;' '*Of the Passion of the Lord and its bitterness*;' and, '*Of the Ascension of the Lord*;' in '*The Moral Concordances of S. Antony of Padua*.'"

These references are confined each to one verse. But Dr. Neale in his introduction to the work says, "Its author had, of course, merely referred to the chapter without the verse." Dr. Neale may not have selected the verse or all the verses intended by the author. Accordingly, when I have found an 888 in the verse next or near to the one cited, connected by the sense with it, I have noted it. And this is the latitude which Mahan allows himself, namely: "To select *passages*, most of them very brief, which, from their meaning seemed likely to contain it (153) as a factor."

The total number of the references to the Old Testament contained under the three heads above mentioned happen to be exactly 153. According to the doctrine of chance, the number 888 might appear once, but not twice in these 153 passages. It appears 47 times.

Another book, '*Prophecies and Types Relative to Christ*,' by Rev. Benjamin Dorr, D.D., has 128 references, and on these the number 888 appears 15 times.

Neither of these books give a full, satisfactory test for this number. The latter is intended for the use of Sunday schools, and, of course, is meagre. The other is mediaeval. But they are the only ones I have been able to consult.

In either case the doctrine of chance is included. The chance that there should be forty-seven 888's in 153 passages is the fraction $\frac{1}{153}$ multiplied into itself forty-seven times, a fraction which it would be idle to compute, but which, on a rough esti-

mate, might be represented by a denomination of something over one hundred ciphers.

Following are some of the references, the verse in which 888 occurs, if it is other than the reference, being put in brackets :

I. Gen. xxiv., 2. [57. "And they said, We will call the damsel, and enquire at her mouth." 888.] [51. "Let her be thy master's son's wife." 888.] Num. xvii., 2, 24, 17. [9. "He couched, he lay down as a lion, and as a great lion : who shall stir him up ?" 888.] Judges xiii., 2. [5. "And he shall prevail to save." 888.] Is. ix., 6. "His name Wonderful, Counsellor, Mighty God, Father." 888. liii., 8. [7. "As lamb to slaughter he was led, and as sheep before her shearers." 888.] lii., 13. [10. "Salvation of our God." 888.] lx., 1. [2. "For, behold, darkness shall cover the earth, and gross darkness the people : and on thee shall arise Jehovah (888) and his glory shall be seen upon thee."] Hosea xi., 1. [3. "Also I set Ephraim on his feet, taking them by their arms ; and they knew not that I healed them." 888.]

II. Gen. xxxvii., 18, 23. [7. "For, behold, we were binding sheaves in the field, and, lo, my sheaf arose, and also stood upright." 888.] 1 Sam. xxi., 31 (15, 16.) 1 Kings, xxi., 9. [10. "Set two men, sons of Belial, before him, to bear witness against him, saying, Thou didst blaspheme God and king, and carry him out and stone him that he may die." 888.] Ps. xxii., 17, 18 (32.) xxxv., 16, 21 (10.) cxlii., 4. "I looked on my right hand and beheld, but (there was) no man that would know me : refuge failed (888) me." Jonah i., 17. "Now the Lord had prepared a great fish to swallow up Jonah. And Jonah was (888) in the belly of the fish three days and three nights." Hab. iii., 4 (8.) Zeck. xi., 12. "And I said unto them, If good in your eyes, give my price ; and if not, forbear." (888.)

III. Ex. xiv., 15 (17, 22, 29.) Ps. xviii., 10 (8) : xix., 6. [1. "The heavens declare the glory of God." (888.) 14. "Let them not have dominion over me : then shall I be upright." 888.]

Even these sixteen quotations prove this number not to be a chance appearance, but a select expression identifying Him whose name counts 888.

J. A. UPJOHN.

EVIDENCES OF IDENTIFICATION OF THE AMERICAN AND BRITISH PEOPLES WITH LOST ISRAEL. A MARVELOUS DISCOVERY.

THE AMERICANS IDENTIFIED WITH LOST MANASSEH—THE BRITISH WITH THE LOST TEN TRIBES—INCONTESTABLE, CONCLUSIVE AND UNMISTAKABLE EVIDENCES—THE DEATH BLOW TO INFIDELITY.

Evidence No. 6.—Israel not lost in Christ's time. It is important to see the point, that the Tribes of Israel destined to be lost, were not actually lost in the days of Christ on earth. It would have served no purpose had they been so and would materially have hindered the mission work to them. They were only lost then, in the sense of being outcast from their land, in positive exile, preparatory to God causing them to become absolutely lost "in the Isles of the West." They could only become really lost in these isles, these forming the only "place" where it could have been said to them "Ye are not my people," and the very identical place, where it has nationally to be said to them, "Ye are the sons of the living God." Hos. i., 10. As a proof that this was so, Christ sent His apostles after lost Israel, and they went after them, and easily found them. Paul and other apostles in carrying out their mission, found Israel in various localities in the full use of synagogues, serving under the Mosaic law. This proves that they must have known themselves, because only Israel was under this law. A Gentile nation has never served under Moses, so the people found under Moses must have known themselves to be Israel, and the apostles at once recognized them to be the lost Israel they were sent after. They had even—though for a long time, about 700 years cast out of their land—kept up their Mosaical institutions in the matter of genealogy and the rite of circumcision, on which questions Paul found them high in dispute, and each would have rendered it impossible

they could be lost to their origin. Just prior to redemption we read of Anna of the tribe of Asser waiting for redemption. At Pentecost devout men, the representatives of outcast Israel, were gathered together from all the regions round about that we know Israel to have been scattered in. The Jews did not share in the outpouring, but mocked, and charged Israel with being drunk, making Peter angry, who said, "Ye men of Judah (Jews) these (Israelites) are not drunken as ye (Jews) suppose." Acts ii., 14-15, and when breaking up at Pentecost, these Israelites were bid to carry the news of redemption and the Gospel to their children, and those not present, but "afar off" (v. 39.), and above all to let "the house of Israel know assuredly, that God had made that same Jesus, whom they (the Jews) had crucified, both Lord and Christ," v. 36. Then after this Josephus, oftentimes styled the truthful historian, testifies to the whereabouts of the ten tribes being known, saying that the "Ten tribes are beyond the Euphrates till now, and are an immense multitude, not to be estimated by numbers," so that this is abundant evidence that Israel was not really a lost people in Christ's time, nor can it literally be said that they were actually lost to themselves completely even after some of them had settled in the British Isles, and we mention this because it supplies another very important historical evidence that the Americans and the British are Israel.

King Alfred was asked by his subjects to give them some new laws. He replied, "You have had the Ten Commandments given you, what can you want more? A code of laws was, however, planned and called the "Dooms of King Alfred," and can be seen in the record office, Rolls buildings, Fetter Lane, London, England. The thirty-third ran thus: "You are to be kind to strangers and those that come from afar, for, remember, you were once sojourners in the land of the Egyptians." This meant, if it meant anything, that the king knew that the British people were of Hebrew origin.

Again, when Richard II. was heir apparent to the throne, and made his first appearance in the House of Lords at twelve years of age, in the year 1377, his chancellor, the Bishop of St. David's, addressed the British Parliament as follows:

"Thus you may embrace your noble King, Edward III. with the arms of your perfect love, since he has sent you him, whom you longed for; and, after your king, embrace with love as perfect my lord the Prince, who is here present, whom you so ardently desired to see; for there is through him that peace over Israel which the Scriptures name, Israel being the heritage of God, and that heritage being also England. For in good truth I believe that God would never have honored this country by victories, such as has given glory to *Israel*, had he not intended it for his heritage also."—Rolls of Parliament, volume ii., page 361.

Evidence No. 7.—The Apostles where the Saxons were. That the Apostles at the command of Christ, when sent expressly after "the lost sheep of Israel," went into the very regions where our Saxon forefathers were then located is self evident.

They went into certain regions after lost Israel and there in the very same regions they found the British ancestors, whom we now know were the identical people of Israel. This cannot fail to be a point of exceeding great interest. Israel had at that time fully broken the yoke of the Assyrian from off their necks. They are proved by historical evidence to have taken a westerly, and not an easterly direction. They are also proved to have been recognized by the name of Saxons and in the time of the Apostles were located in the region of Cappadocia, Galatia, Macedonia, Thessalonica and the regions round about. These Saxons are now proved to be the Israelites, and we know they were our forefathers. They were found still under the Mosaic law, and were distinctly told by these Apostles, that Christ had redeemed them from this law. They were told that they were once under the law of Moses, but then by redemption had been delivered from it; once under it, but then were dead to it, that this Mosaic law had been to these Saxons only a schoolmaster to bring them to Christ, therefore by receiving this knowledge they immediately accepted Christ and became a Christian people. This was the very news they had been waiting for, why they had kept waiting about these districts. With the knowledge given to them, there was no need to wait about longer. From

that time they could press on their course in fulfillment of further Scriptures, they could depart and seek their final home of exile in the isles. They became a great people, quickly started in motion, with their faces to the west, they had embraced Christianity, and this clearly and satisfactorily supplies the reason why it was, as is well known, that from this time there were great hordes, or continents of people, who had become Christians about these parts, but who had, in a course of time most mysteriously disappeared. This has been ascribed to the decay of Christian truth; it was nothing of the kind. Those who had received Christ were these masses of Israelites, who had now become wanderers, a host of tribes in transit, having answered to the very express mission that Christ was sent unto, "I am not sent BUT UNTO the lost sheep of the House of Israel." Here they were having made a full acquaintance with the work of their blessed Redeemer. Thus this glorious historical evidence is in full favor of and not in deterioration of Christianity, and supplies an answer to a void felt for many ages.

Evidence No. 8.—God's plan of losing the tribes. God's method in causing the tribes to become lost to the knowledge of mankind appears to be very simple and natural. They had to comply with several expressed conditions. They had to be called by another name (Isa. lxx., 15) to be spoken to in another tongue (Isa. xxviii., 11) *i. e.*, to adopt a new language. This would obscure the knowledge of their origin, which design would be materially assisted by being taken away from Moses; thus, with a new name, a new language and a new religion, it would seem to be easy to shroud their nationality in darkness. In these cases the prophecies of Moses could readily be complied with. God declared He would "hedge up their way with thorns;" surely this was the way to do it; that He would "make a wall," or a very screen of obscurity; and this was effected; "that she should not find her paths" (Hos. ii., 6) by which her marks of identity would be destroyed; that they "should follow after their lovers;" doubtless their beloved brethren of the tribe of Dan; but they "should not overtake them." Dan would have been then in Ireland, but these tribes were not to go there, but to confine themselves to Great Brit-

ain; therefore, though following, would not overtake. Though they had received a knowledge of Christ and His work, even this, for a time, was to be forgotten. She was to be visited with the days of Baalim, v. 13, *i. e.*, she was again to fall into the darkness of idolatry, but only the same old system, Baalism, the form of idolatry Israel always turned to when they forsook God in Palestine. There are ample proofs that Dan turned to Baal when in Ireland. The round towers of Ireland were only furnace shafts for the fires of Baal, and Baal Hills, upon which Baal fires were kindled, abound now in Ireland, Scotland and England. Thus Israel was to be stripped naked upon her entrance in the isles, as in the days of the wilderness (v. 3,) before she entered Palestine. She was to enter the isles in this degraded, woe-begone estate. The historical evidence that she was actually in this state, is supplied by the fact of these very Israelite-Saxons making their first appearance in Great Britain under the abortion of Druidism, this only being a refined species of Baalism. It was the creation of a Gentile genius, clumsily constructed, savage to cruelty in its details, so that when the superior mind of Israel was required to kiss idolatry in order to pass them into their required "blindness" (Rom. xi., 25) they had to reconstruct Baalism, and, by learning and culture, redress its points so as to produce significance and meaning to its parts, which came out in the guise of Druidism, idolatrous after all, and which has caused our people in modern ages to stigmatize it as a mixture of culture and barbarism, requiring the blood of the slain to be drank in the skulls of the dead, and other practices utterly opposed to the dictates of Christianity. These marked the entrance of the tribes into Britain. What scheme could be better fitted to bring to pass God's design? Nor was this all. We may be quite sure there would not be a flaw in the Almighty's plan of operation. Would the tribes be passed into their isles in possession of the rite of circumcision? I answer, most certainly not. Had this been preserved, it would have been next to impossible to secure them as a lost people upon the earth. This very mark would have stamped them as a well-recognized kindred; in itself it would have frustrated the object in view. To suppose or suggest this

would be equivalent to charging God with a folly; it would be to reflect on His wisdom, for how could a people, destined to become an enormous multitude, and indelibly marked by circumcision, ever have become lost? But there was no necessity for this mark; it belonged expressly to the Mosaic economy, and from this they had been taken away. They were now entirely redeemed from Moses, had nothing to do with him, so would have had no business with this mark (John vii., 22) and this is an all-sufficient answer to the objection often raised, that we could not be identical with the Israelites, because we have not the mark of circumcision in our midst. Gal. v., 6.

Next comes the important question: Would God have sent the whole body of the tribes into these islands at one and the same time? And again I answer: most certainly not. In all, eleven distinct tribes had to be imported; combined they had to come out a multitudinous host, had to swamp by numbers any Gentile nation upon the earth to become the most prolific race in the world. One tribe only, Manasseh's, was indisputably identified, as the Americans had to become in fruitfulness of issue nearly as prolific as the whole ten tribes put together (Deut. xxxiii., 17), so that it would most surely have followed that, if these eleven tribes had arrived at the same time, the finger of history would have been bound to have recorded the fact upon its pages, and when these phases of their prophesied acts should be brought forth, one by one, with the mind of the whole world asking after their whereabouts, they would have placed the prophecies and the productions side by side, found them tallying and connected, and again would the project of the Almighty have been frustrated. By this we know this plan was not followed by God. He was wiser. The mystery of blindness was enacted by taking advantage of the tribal rules; each tribe was kept separated; they bounded upon each others borders, but they did not mix; they were forbidden to inter-marry, and so religiously did they observe this institution that in Assyria, in Medina, and in Western Asia they preserved these tribal distinctions and their separating boundaries. This involved upon the Apostles the visiting of various districts. When sent after lost Israel, each tribeship had a different loca-

tion. In this sense they became "the dispersed among the Gentiles" (John 7, 35), so that when the time arrived for the tribes to drift into the isles, they were drifted one by one; long lapses of time occurred between each drifting; these have been recognized as "the waves of migration;" centuries filled up the gaps of time. It took 449 years to ensure the first arrivals—plenty of time, by the aid of new generations, for the people to beget a dim insight of their ancestry. Scripture had to be complied with, and they had to be called by other names, adopting *aliases*. Paul had well prepared their way; he objected to their retaining their genealogies; laughed at this, styling them old women's fables, so genealogy became disused. They ceased to have communication with each other, were without a postoffice system and had never seen telegraph poles. What better design could have been adopted to have ensured their lost estate? Why the plan was matchless, it was consummate and sublime, and alone could emanate from the Divine. It answered splendidly. Dan was already in Ireland, and Simeon accompanied him, crossing into Scotland. There was also with them the Cadites, an Israelitish family. Then came after long intervals the Albanians whom, probably, we may be able to identify with the *alias* of Manasseh; then Picts, then Frisians, Danes, Jutes, Saxons, Angles; and lastly, but most surely, the Normans, who are already acknowledged to be identified with the Tribe of Benjamin, the identical tribe that the Apostle Paul belonged to (Rom. xi, 1.) Here we have eleven different names, and we do not want any more, only having to account for eleven missing tribes. We have done our duty, these are the tribes. The Bible is now opened up, and the mystery cleared, that surely now we can afford to laugh, and this is the amusing matter. Because we came in separately, our fathers jumped to the conclusion that we were all Gentiles. They decided we were the rag-tail and bob-tail of some disgraced Gentilites who in different parts had received a thrashing, had been running away and by mere chance happened to find an asylum in the British isles. Then they consider it not all a strange thing, that with such tame beginnings, we should have shaken hands all round, thrown in a common lot, combined, and then again by mere

coincidence have come out the strongest and most highly favored nations of earth, whereas, Israel and Manasseh alone upon the earth, were to occupy these exalted stations. Poor simplicity! John Bull and Uncle Sam gulled from the first and palming the gull upon their children in their board and public schools, their colleges and universities to this day, I have to pay 1s 4d in the £ as a school board tax, and allow them to teach this abominably false and unreasonable version, as the history of the nation, which is the most essential point of education. The most astounding thing of the whole matter is that we are Bible reading people, and, as students, ought to have known the tribes had to enter these islands, had to have a prior acceptance of Christianity, had to turn again to idolatry, had to re-unite with each other, had to come out a combined nation (Jer. xxxi., 10), had to suffer under the separation of Manasseh. That these people had to become the two most powerful nations of the world, *i. e.*, the exact counterpart of the history of the British and the Americans.

In conclusion, it is well to add to this class of evidence by presenting the "door of hope." Israel had only to enter these islands an idolatrous people to secure a purpose, but were not to remain in idolatry, because God promised once more to "allure her" in this wilderness "and to speak comfortably unto her," that they should call the Lord Ishi, and not Baali, whose name He would take out of her mouth. Was it so that she could again embrace Christ, be an eminently Christian people, and espouse the great missionary cause for Christianity, a part we have admirably filled as well as all others?

Evidence No. 9.—Israel in exile in Islands. Of course in the case of anything lost, it becomes of vital consequence to discover the place for finding, especially in the matter of the lost tribes. No one could have any regard for the Bible without being interested in the lost tribe question, neither could they understand the Bible without understanding this question. Search after the lost tribes has been made in all ages, the learned of most nations have taken their part in the search. They have been supposed to have been found in every quarter of the earth and in most parts; thus much time, labor and ex-

pense have been entailed, might almost say wasted, because the Bible is very explicit as to the place where the tribes shall be found, and if people had only searched their Bible they might have found Israel long ago.

They must be re-discovered in islands after the division of Israel from Judah and the exile of Israel from Palestine. Whenever God specially addresses Himself to Israel, He refers to the isles, speaks to them as in the islands. He would have no purpose in doing so, unless they were there. "Keep silence before me, O island" Isai. xli., 4. "Sing unto the Lord a new song, and his praise from the end of the earth—the isles and the inhabitants thereof" Isai. xlii., 10. "Let Israel give glory unto the Lord, and declare His praise in the islands" Isai. xlii., 12. "Listen O isles unto me" Isai. xlix., 1. "The isles shall wait for His law" Isai. xlii., 4. "Declare in the isles afar off, and say, He that scattered Israel will gather him" Jer. xxxi., 10. "To the islands will he repay recompense" Isai. lix., 18. All these Scriptures have direct reference to Israel, and in no sense to Judah they are only applied to Israel, and beyond doubt refer to Israel as an island people. It is quite true that there are many islands about the earth, some of them very near to the seat of prophecy, Palestine; such for instance as the Greek islands and these might be suggested as the islands referred to. But these would not answer the Scriptures, from the very fact of being "near to," instead of "afar off." That Israel would be in possession of these isles at this present time is most clear from the Scripture fact, that should the return of Israel take place next month, the very proclamation of the return would first of all have to be proclaimed in the isles. A free translation, and what is really meant in Jer. xxxi., 10, might well be rendered thus: Proclaim a royal proclamation in the isles (British) afar off, and proclaim He that scattered Israel will gather him (in the isles, the place of proclamation). The great beauty of these Scriptures prophetically, is that they declare the mind of God to Israel in the latter days. These Scriptures were *not* given when Israel and Judah were one, before their division had taken place, but were issued B. C. 606, or 115 years after Israel had positively been

in exile, at a time when Israel was already cast out, but when Judah was not, indeed 18 years before the Babylonish captivity of Judah had taken place. The declaration is embodied in prophecy, therefore nothing could cancel it. Prophecy is the "more sure word" (II. Peter i., 19) therefore may be said to express the latest determination or will of the Almighty. Christ declares that it must take effect, saying "Think not that I am come to destroy the law (Ten commandments) or the prophets: (the voice of prophecy). I am not come to destroy, but to fulfil. For verily I say unto you, Till heaven and earth pass, one jot or one tittle shall in no wise pass from the law till all be fulfilled." St. Matt. v., 17. This very assurance of Christ's, ensures the proclamation being made in the islands, ensures Israel being there now, and ensures Israel's return from a "north country" (Jer. iii. 18), "when a great company shall return thither." Jer. xxxi., 8. If this were not so, Christ would have made a false statement, God would have broken his word, and the Bible would be rendered untrustworthy. As this is impossible, it follows, these things must be so, and Israel must now have exile in an island home.

Evidence No. 10.—Israel's islands must be northwest. It is not enough to find out that Israel's exile home would be in islands, but the very geography of these islands is given in Scripture. This fact is very plainly ascertained. They must be isles afar off, and northwest from Palestine. In Hebrew there is no method of expressing the intermediate points of the compass. It can express the cardinal points, north, south, east, west; therefore, when the intermediate points are required, they are expressed in this way: By the sides of the north, implying whether N. E. or N. W. (Isa. xiv., 13); by the sides of the east and west (Ezek. xxxii., 23); side of the north (Lev. i. 11) etc., etc.; or the idea can be expressed by the mention of two cardinal points separately, the method generally employed to describe the position of Israel's isles. Thus, "Go and proclaim these words towards the north, and say, Return, thou backsliding Israel."—Jer. iii., 12. Of course the House of Israel and not the House of Judah is here referred to, because in the very preceding verse the distinction of Israel

from Judah is given thus : "The backsliding Israel hath justified herself more than treacherous Judah." (See also v. 8.) This was said ninety-two years after Israel's captivity, or forty-one years before Judah's captivity. "They shall come together out of the land of the north to the land (Palestine) that I have given for an inheritance unto your fathers."—Jer. iii., 18. "I will gather thee in the west."—Isa. xliii., 5. "To the island will He repay recompense, so shall they fear the name of the Lord from the west."—Isa. lix., 19. The new song they are yet to sing is to be, "The Lord liveth which brought up, and which led the seed of the House of Israel out of the north country." Jer. xxiii., 8. "They shall lift up their voice, they shall sing for the majesty of the Lord, they shall cry aloud from the west. Wherefore (Israel) glorify ye the Lord by the Urim and Thummin, the name of the Lord God of Israel in the isles of the west."—Isa. xxiv., 14, 15. It is right to observe these last vary slightly from our current version, but I am authorized so to render them. The word "sea," the identical Hebrew word, is thirty times elsewhere correctly translated "west," and eminent Hebraists have instructed me that the term "west" should be used instead of, in the two instances, "sea"; also, that no reference is made in the original to the "fires of Baal," but a pure reference is made to the Urim and Thummin, and as these are known now to be in Ireland, point is given to these Scriptures, which, so translated, renders them both intelligible and highly significant. Further comment is unnecessary. The evidence is contained in the British being identical with Israel, dwelling in islands northwest, and afar off from Palestine; and in the Americans identical with Manasseh, having for a long time had abode in, and springing from them. What more is wanted? This evidence is conclusive in itself.

Artellus says: "The ten tribes went west and north to Ars-ereth, where, on entering, they were called 'Gan-thei, or, the people of God.'"

Chambers, in his 'Encyclopædia,' says: A Saxon league, or confederation, makes its appearance in the northwest of Germany."

Esdra's tells us that the ten tribes entered into the Euphrates

by the narrow passages of the river, and went westwards: "For, those are the ten tribes which were carried away prisoners out of their own land in the time of Osea, the king whom Salmanasar, the king of Assyria, led away captive, and he carried them over the waters, and so came they into another land. But they took this counsel among themselves, that they would leave the multitude of the heathen, and go forth into a further country (westwards), where never mankind dwelt, that they might keep there their statues, which they never kept in their own land, and they entered into Euphrates by the narrow passages of the river, for the Most High then showed signs for them, and held still the flood till they were passed over, for through that country there was a great way to go, namely, of a year and a half; and the same region is called Arsareth."—2 Esdras xiii., 40, 45.

Evidence No. 11.—Renewing strength in the Isles. Of course it must be readily seen and admitted, for a great people like Israel, to go through the fatigues of transit, in being transferred from one part of the earth to another, in distance reckoned by the Esdras "as taking a year and a half" of time, if done, without stoppages, (2 Esdras, xiii., 10,) would entail a considerable diminishing of strength, the more so, as they had been in exile for so long a time beforehand and the stock comprising not only men, but women and children. Paul foresaw the enormous difficulties they would have to contend against in forcing their way through foreign territories, and gave the advice that it was better for them not to marry, (1. Cor. vii., 26,) of course he was not suggesting a standing rule, because the people had to become as the sand of the sea for multitude, and such a will would have run counter to the will of God, but it was good for those times of "distress." That there was a diminishing of strength is clearly recognized by Scripture. God says "He giveth power to the faint, and to them that have no might He increaseth strength. Even the youths shall be faint and be weary, and the young men shall utterly fall. But they that wait upon the Lord shall renew their strength; they shall mount up with wings as eagles," (Isai, xl., 29, 31.) Probably a reference to the American eagle. In

the next chapter, Israel is referred to as having arrived in the isles "Keep silence before me O islands, and let the people renew their strength" (Isai, xli., 1.) That Israel is intended to be the people to do this is clear, for, "thou, Israel, art my servant Jacob whom I have chosen, the seed of Abraham my friend. . . . Thou art my servant. I have chosen thee, and not cast thee away. Fear thou not, for I am with thee; be not dismayed, for I am thy God; I will strengthen thee; yea, I will help thee; yea, I will uphold thee with the Right Hand of My Righteousness." (v. 8-10.) These are promises made by God after their exile, to apply when they had reached the isles whither they were directed to. If God had not made such an arrangement He would have broken His covenant with Abram, with whom he covenanted to make his seed as "the dust of the earth."—Gen. xiii., 16. "As the stars for multitude."—Gen. xv., 5. "As the sand."—Gen. xxii., 17. And surely the evidence is sufficient. From that day to this we have been continually increasing, to the extent that now the British are 100,000,000 strong, and the Americans 50,000,000, with the astounding fact before us that we can double our population every thirty years. No other nation upon the earth increases at this enormous ratio, and it becomes a matter that must be looked at fully in the face. For instance, take the French nation. It has been computed by one of their people, accepted by them as an authority, that, building upon their present birth-rate ratio, in one hundred years from the present time they would not be more than 69,000,000 strong. Supposing even the Germans to keep up their present birth ratio in the same time, they would not exceed 130,000,000 of people, whereas, in the same time, keeping up the present ratio, in one hundred years from now the British race will number 1,000,000,000, and the American race will number 800,000,000. That we shall and must keep up this ratio is guaranteed by the word of God, who has promised to Israel that, "Thou shalt increase as thou hast increased," meaning, of course, that the ratio shall be preserved. London numbers five millions of inhabitants; last year seventy miles of new streets were formed, and the great problem of the people in the country districts is how to feed the

people of London ; and, with the enormous growth of the people, should it not be a problem how to provide outlets for them ? But let the Americans also look to their homesteads. They belong to a race distinct and separate from all others. Their Anglo-Israelite descent becomes of valuable import to them. It is the only question that can rightly govern their state councils. Because God has provided for them a widely spread home, it by no means follows they can be profligate with its resources. The great thing to remember is that it is *their* home. God has expressly provided this large country for their use, and these figures show that they can soon stock it with their own people, and may soon require other large districts for their accommodation ; that it becomes a vital question whether it is statesman-like to open its gates widely for all comers, and to allow these comers equal privileges with themselves. The more so as it is the great privilege God has bequeathed to Israel, and only to Israel, "to suck the breasts of the Gentiles," meaning they, the Gentiles, are required by God to occupy an inferior position on the earth to Israel, which again is implied by the declaration made by God that, "the Gentiles shall serve thee." (See also Isa. liv., 3 ; lx., 3, 16 ; lxi., 6 ; Jer. xvi., 19, and hosts.)

It is right to remember that the whole of this prodigious increase and telling prosperity of the Saxons started from the period that the Anglo-Saxons, as having been identical with Israel, the only seed "called in Isaac" as Saxons, renewed their strength in the "Isles of the West." What could be a more conclusive EVIDENCE ?

Evidence No. 12.—Our mission to establish the earth.—It would be impossible to establish Israel's identity, unless with a people who in every particular brought forth fulfillments to the prophecies God gave Israel to respond to. We declare the Anglo-Saxons have given response to all, without a single exception, required to have fulfillment up to this time. We have traced her footsteps to the time she entered "the isles afar off," where she was to "renew her strength ;" in other words, to vastly increase in population. We are told by Isaiah what would happen to her in these very isles. The increase was to

become a burden to her. The sea on every side prevented her country from expanding. Her people so multiplied that they became cramped up for room in every direction. They had not space to give scope to their enterprises. The situation became alarming; the prospect of their future was distressing; the whole arising from their extraordinary multiplicity. All this is explicitly told us in the Bible, the dismal picture being presented through the vision of prophecy. What were they to do? There was only one way of escape, the sure way open to all of us in the time of distress; that was, take the matter to God, plead with Him before the throne; and they went to prayer. The simplicity of their prayers was truly beautiful; each petition was framed in dignity and force, and went with persuasive effect before the Almighty. They had entered these isles as "waste and desolate places;" they had become the lands of the exile, and had "even now become too narrow, *by reason of the inhabitants*"—Isa. xlix., 19 (increase of population), and Israel cried, "Give place to me that I may dwell." (v. 20.) God asks, "Can a woman forget her sucking child, that she should not have compassion on the son of her womb? Yea, they may forget, yet will I not forget thee; behold, I have graven thee upon the palms of my hands; thy walls (boundaries of territory) are continually before me." (v. 15, 16.) And thus the Lord answers their prayers, "Thus saith the Lord, In an acceptable time have I heard thee, and in a day of salvation have I helped thee: and I will preserve thee, and give thee for a covenant of the people, to establish the earth, to cause to inherit the desolate heritages." (v. 8.) Here is a direct instruction from God that Israel was to enlarge her walls, to lengthen her cords so as to take into her dominion other countries to serve as outlets for her people, and so ease the islands, saving them from overcrowding. This was the beginning of colonizing. They were "to break forth on the right hand, and on the left, and thy seed shall inherit the Gentiles, and make the desolate cities to be inhabited."—Isa. liv., 3. "Enlarge the place of thy tent, stretch forth the curtains of thy habitations: spare not, lengthen thy cords, and strengthen thy stakes." (v. 2.) By virtue of these Scriptures, it is evi-

dent that all the waste and desolate lands, with countries sparsely inhabited, that were in existence at the time of the issue of these prophecies, God directly and unconditionally has given to the seed of Israel, *i. e.*, to the Anglo-Saxons. We possess the prerogative to claim each one as our right; the promise belongs to the Americans equally with the British; each of us has the right of claim. God gave us these waste heritages in response to prayer, and Manasseh joined in those prayers. Manasseh was in the British isles at the time, and felt the inconvenience of being in a country too strait, too narrow by reason of the multitude of the people; and it is not only the privilege, but the duty of the Americans to take her fair share in the work of filling up the waste places of the earth. I claim for Britain the Transvaal, New Guinea, a South African dominion, Zululand, the Ashantee district, the Ionian islands, Creta, Afghanistan, etc. I see not why Africa should not be divided with America, specially the negro possessions. She once forced them from their country, and should now care for their land. We have the right of claim to the whole by the promise and will of God. America will look after Mexico and a lot of republics hanging about, panting for the arrival of men of enterprise; and, indeed, the whole of South America as far as I know. Russia may have most of Turkey, but England must possess Constantinople, with the Dardanelles to Troy. I bequeath Assyria, Armenia, Babylonia and close regions to Germany, and Cappadocia, Galatia, Bithynia, Macedonia, Illyricum and round about to Britain, with, of course, Palestine in the joint occupation of herself and America, and this probably is the ultimate way that England and America will finally establish the earth in obedience to the will of God.

EDWIN HINE.

[TO BE CONTINUED.]

RUSSIAN METROLOGY.

ITS AFFINITIES—THE TRUE POSITION OF THE ROYAL CUBIT.

A biographer (J. S. C. Abbott, in Harper's Magazine, several years ago) credits Bonaparte with having said: "Why, these Russians are a remarkable people; their archine is the same as our metre." With all his rascality and clap-trap, it may be doubted if Napoleon was so intensely silly.

The schedule will explain the theory of their striking system, better, perhaps, than it can be done in words. Two or three points of correlation were noted in the "Metric Analogues," but the subject was revived by a peculiarity in the markings of the Turin cubit, as they were communicated to me by Rev. H. G. Wood. That implement is divided into 28 digits, 25 of them uniform and the remaining three larger. A double line at the 24th digit marks off the ancient Egyptian cubit (precisely $\frac{1}{100}$ of the Schoenus as quoted by Bishop Cumberland), now known as the Nahud cubit; the digit being the Egyptian digit of 0.7289 Pyramid inches. Thus 9 such digits (from the 15th to the 24th) mark the itinerary span, as I have termed it, and 30 such the Mosaic cubit as given by Cumberland, of which the 15th division marks the exact half. So that here we have the natural divisions of time in the day and in the calendar month. But the Mosaic cubit had also its special division into 24 digits. The 25 Egyptian digits on the Turin cubit may be construed as an index to the *number* of the sacred cubit itself, while the remaining digits, each $= \frac{1}{100}$ polar cubit $\times \pi = 0.7854$ Pyramid inches, indicate, by their number and quality, the fundamental Egyptian division of the circle, the quadrature and (through the Egyptian system) the polar cubit and pyramidal inch as the modulus of the whole. The double line may additionally mark a small lack of correlation, or a correction, necessary in reducing from circumferential to diametric or linear measure. The markings indicate the decimal arithmetic,

and furnish all the main factors or ratios in practical geometry, and in fact point to the plan of the Pyramid and the Temple. Viewed in this light, it is a mathematical implement of wonderful power.

The equation, then, for its total length in polar cubits is:

$$L = \left\{ \frac{2 \times \sqrt[3]{a^2 b}}{9 \times 24 \times 10^3} + .03 \right\} \pi \pm C$$
, which may be put in the form, $L = \pi \times \frac{\sqrt[3]{a^2 b} + 1,296,000}{43,200,000} \pm C = 0.82314 \text{ cubits} \pm C = 20.5785 \text{ Pyramid inches} \pm C$, in which a faint shadow of the Babylonian factors appears in the denominator and in one term of the numerator, by an arithmetical incident, resulting from purely Egyptian factors.

The Louvre cubit is a little shorter, having 26 Egyptian and two longer digits, making in all, as quoted, 20.5704 Pyramid inches. Assuming it to have been constructed on an analogous theory, it would be about 20.522. This might easily result either from excessive value in the digit or from a different value and contrary sign in the correction.

So many different versions of the royal cubit exist among the preserved specimens, and so many different indications of its length, ranging all the way between 20 and 21 inches, are reported by explorers of the monuments and temples, that any attempt to fix its absolute length as a standard, either by direct measurement or weighted mean, is hopeless. If it was the standard by which the Great Pyramid was built, it seems incredible that such variations should appear, in that structure at least. Petrie gives an exceedingly wide range of dimensions, in which he is fully borne out by Taylor, Professor Smyth and others; but giving weight to the king's chamber, settles upon 20.611+ for the cubit and 0.726+ for the digit, if we translate into Pyramid inches ('Temples and Pyramids of Gizeh,' pages 81 and 180). Ballard, from other considerations—among which is a rather refined projection of the Babylonian circle upon the polar axis—suggests 20,2006 geometric inches ('Solution of the Pyramid Problem,' New York, John Wiley & Sons, 1882, p. 16). And however well settled some form of it may have become among the architects of the later temples (Karnak post-

dates the Pyramid by some eight hundred years), the above discrepancies suggest innumerable difficulties in the way of its being regarded as *the* standard of the Pyramid, and weigh with double force against any claims advanced in its behalf as the *sacred* cubit. And in any view, it is absolutely wanting in the simplicity of conception and comprehensiveness of office which attach to an emblem of the radiant "rod of God"—Light—which spans the typical circle from the centre to the circumference, from the Alpha to the Omega.

"And Aaron cast down his rod before Pharoah, and before his servants, and it became a serpent.* . . . They cast down every man his rod, and they became serpents; but Aaron's rod swallowed up their rods."—Exodus vii., 10, 12.

And we can readily see how great a variety of cubits might result from the attempts of mathematicians to express logically the precept of "a cubit and a hand breadth," published by Ezekiel for the first time, so far as we knew, each one starting from some typical form with his own "personal equation" and individual theory of systems. In fact, Petrie notes a marking in the chambers of construction, the significance of which has been overlooked ('Temples and Pyramids of Gizeh,' p. 91.) It is a stone sixty-five inches long marked "3 cubits." The form of expression indicates that the inches are not given exactly but the quotation-marks suggest that the inscription is archaic, though he does not state in what language. The stone is an index to the *Mosaic* cubit. This confirms a belief suggested by the different indications before alluded to, that a variety of cubits might have been used about the Pyramid, including several versions of the royal. In such case a mathematician could easily mark each one, upon a principal like that indicated by the Turin cubit, so that the operation could receive precise instructions from the overseers, each band work with their accustomed cubit, the work fit to its place, prejudices as to standards humored, and the confusion of Babel avoided. Yet an index to the real standard, together with the principles of geom-

* Mark the Egyptian representation of the circle as a symbol of the Divine and the Eternal, an endless serpent with its tail in its mouth. . . . "Swallowed up," *i. e.*, logically involved.

etry and a key to the plan, would be presented, unknown, perhaps, to the operatives. Each implement, like the interior of the Pyramid, would express *ratio* in the same way as Gunter's rule, which may be made of any length and marked to any known scale we please.

It is remarkable that, by a very slight change in the correction, the Karnak rule and the royal cubit become respectively equal to the circumference and half-circumference of a circle upon the itinerary span as a radius. I have already shown (INTERNATIONAL STANDARD, September, 1884, p. 406) that this

span (in polar cubits = $\frac{\pi \sqrt[3]{a^2b}}{12 \times 10^7}$) raised to the third power, is

cosmically expressive of a fair ten-pint gallon, and in water of a ten-pound weight. Here, the exponents all being tripled, π would appear in the third power. But being simply a ratio, its exponent never affects the quality or power of any result into which it may enter, but simply modifies the dimension. Yet the powers of π are necessary in the expression of physical correlations. Hence this form of the royal cubit, considered as a function of the polar cubit, may be convenient in settling correlations among the units of force, energy and effect in the simplest manner. It may be of especial value to electricians.

Its equation is $L = \pi \times \frac{\sqrt[3]{a^2b} + 1,296,000}{43,200,000} \pm C = \frac{\pi^3 \sqrt[3]{a^2b}}{12 \times 10^7} =$

0.8244 — polar cubits = 20.6089 — Pyramid inches, which is the value I have used in the prospectus. The Babylonian factors disappear, and the dimension coincides fairly with the most approved determinations known. A variety of other interpretations have been suggested, formed upon geometrical or arithmetical operations with the inch as a unit, resulting in about the same number, 20.626±.

It might be hazardous to assert that this particular cosmic relation, together with all the rest which have been pointed out or may be found, were present to the inventors of the implement or to those who finally settled its prevalent dimension. But conceding all, and that it was a device of men of almost boundless knowledge of geometrical and cosmical relations, it appeals rather as a complex function of the polar cubit and

inch, a working mathematical instrument,* a concrete *X* or solved equation whereby an educated man could work out a variety of problems and illustrate a wide range of facts, than as a radical standard measure of itself. It is an index or pointer to Nature, to the Pyramid and Temple perhaps, and to the true metron; but withal, a creation of the human mind, and no more to be called the sacred cubit than are the best of commentaries and expositions to be confounded with the Divine law. This is, in fact, suggested by its traditional name—the *royal cubit*—and confirmed by its absence from all systems except those traceable to Babylon. The Russian system is a most remarkable case in point.

In the table of "typical cubits, etc.," the computations are based on Clarke's estimates of 1878. With a barely microscopic allowance upon the Mosaic and Egyptian cubits, and such dimensions as are given in even British inches, the relations are exact to one-eighth of an inch in the mile.

The Russian system points clearly to the Temple, the Tabernacle, the Pyramid (and, I almost think, indirectly to Ararat), and connects with the Egyptian by factors, which are Phœnician, Syriac and Hebraic, but decidedly not Babylonian. It is ancient. It cannot be accounted for by the march of Dan, nor of the Saxons, nor of the Normans, nor yet of the Saracens. It has too little in common with what they have left, or with the other European systems. Its connection with the Swedish, Hanover and Brunswick mile indicates that it antedates the invasion of Amurath I, for, as I understand it, after that invasion the Russian kingdom and learning lapsed into almost absolute zero and night, till the shield and sword of Sobieski interposed.

Who, then, and whence are these people, the present dominant element in the Russian empire? Is it possible that by some movement of which the historical traces have become lost or nearly effaced, the dispersing tribes swarmed over the Altai into Tubal, and thence over the Ural (or by distinct move over the Caucasus) into Meshech, and made at least as strong

* For a charming and brilliant elucidation of the surpassing power of the sacred cubit as a mathematical instrument, see Lieutenant Totten's great work, 'An Important Question in Metrology,' p. 155 *et seq.* (Imp. John Wiley & Sons, New York, 1884).

an impression as they appear to have done in the other direction? I allude to certain features in the Brahminism and Buddhism of the Indies. Perhaps comparative metrology may yet lend aid to philology in solving this and kindred problems.

JACOB M. CLARK.

New York, July, 1885.

THE DRUIDS.

"For the statutes of Omri are kept, and all the works of the house of Ahab."—Micah vi., 16.

Recently I have found the Bardic sign for the name of Jehovah, and traced its correspondence with the tetragrammaton. This Druidical sign was formed of three short, converging, straight lines, not quite meeting in a point at the top. In a manuscript found among the few preserved treasures of Raglan castle—which stupendous structure, somewhat like the Pyramid, seemed to have contained the foundation of all truths—these lines are said to be the vocalization of the name of God, as melodiously sounded at the creation. No mortal was permitted to attempt its utterance. In examining the sign, I find it composed of the Celtic letter jodha (our I) three times repeated. This letter is the yod of the Hebrew and the iota of the Greek. In the Samaritan alphabet it is composed of three lines; in the Etruscan and Cadmean it is one line, like our printed capital letter I without the cross pieces. The tetragrammaton is the yod three times repeated; the Bardic sign is the jodha three times repeated. In each we have a three-fold expression of the Divine existence; in each a trinity in unity—three persons in one God.

Thus, also, did the Druids preserve the sacred revelation so carefully guarded by the House of Israel, and reverence the unpronounceable name, the "I Am," the Jehovah, "which was, which is, which is to come."

An Irish secret alphabet has come down to us called Ogham Beth-luis-nion, from its first three letters. Mr. Toland says the

word Ogham, written Ogam, Ogum or Ogma, signifies in Ireland the secret of letters, and Mr. Higgins believes that one of the ogums was the secret and sacred character of the Druids. St. Patrick is said to have destroyed three hundred books written in this language, considering them as magical, and therefore sinful. In Welsh the word Ogan means augury, or divination, thus preserving the idea of magical characters. Aos in Irish curiously signifies both a tree and knowledge, and the alphabet was to our ancestors a wood or forest; the Beth-luis-nion system was a tree; the upright trunk the alpa (also Chaldaic for trunk of tree); the letters were the leaves; the fruits were the teachings or doctrines growing out of the system. The worship of trees, previously referred to, was thus combined with the priestly secret knowledge, and came to the people as part of the sacred religion to which they could bow in humility, but not presume to understand or to question.

The Druids said they inherited the secret system of letters from remote antiquity. Taleisin says the magical lore was taught to him in *Hebraic*. One of their customs seems to have been of Phœnician origin, that of carving words upon rods or staffs made square or three-sided, on which the letters could readily be cut upon the flat sides, as they were simple in form, being composed of straight lines. The Arch Druid performed miracles with his magically carved staff and prophesied by its help.

"My people ask counsel at their stocks, and their staff declareth unto them, . . . therefore the people that doth not understand shall fall." Hosea iv. 12-14

Their wisdom was not all committed to writing, most of their instruction was oral, and twenty years were sometimes required before the novice was able to take his place among the prophets. These prophets—termed Eubages or Vates—professed to foretell future events; it was especially their business to watch the stars, "the disposers of the affairs of men," and to settle the times of the festivals by their observations. These "observations" included the influence of the stars on all things connected with man, not only in life, but in regard to the time and manner of death. This learned class naturally obtained control of the state as well as the church. Their judgment was final, and

as there was no appeal, their power was abused by fearful cruelties and oppressions; they coveted the very "dust from the head of the poor" (Amos ii. 7), while they lived in corrupt luxury. They made feasts of their sacrifices, and pageants of their religious services, at which the people gazed, but in which they had no part, except sometimes to enlarge the processions or to join in the choruses, for music both vocal and instrumental was a very important part of their worship.

"Wo to them," saith the Lord, "that trust in the mountain of Samaria, . . . to whom the house of Israel came. . . That lie upon beds of ivory. . . That chant to the sound of the viol, and invent to themselves instruments of music, like David; that drink wine in bowls, and anoint themselves with the chief ointments, but they are not grieved for the affliction of Joseph." Amos vi. 1-7.

"Your treading is upon the poor, ye take from him burdens of wheat, . . . Take thou away from me the noise of thy songs, for I will not hear the melody of thy viols, . . . I will cause you to go into captivity beyond Damascus, saith the Lord, whose Name is the God of Hosts." Amos v. 11-27.

The bards of the middle ages speak often of a traditional mystic caldron of wisdom. Taleisin says it was the fountain of his genius. In his initiation we are told that when three drops of the water of this sacred vase touched the lips of the bard, the future became known to him. Druidesses were also initiated into the mysterious wisdom of the order. Higgins says the Northerners called them Alirunæ. They had charge of the sacred fire, which was like that among the Jews, which tradition tells us must not be polluted by being blown with the breath, and which must be fed with peeled wood. It is said that future greatness was foretold Diocletian by a female Druid. There were prophetesses in Israel, but it was to those who had lost the purity of their faith to whom the Lord spoke.

"Likewise thou son of man, set thy face against the daughters of thy people, which prophesy out of their own heart, and prophesy thou against them, and say . . . Because with lies ye have made the heart of the righteous sad, whom I have not made sad, and strengthened the hands of the wicked . .

by promising him life . . . therefore ye shall see no more vanity nor divine divinations." Eze. xiii. 17-23.

In certain festivities particularly in those of marriage, the Druids offered drink-offerings and cake to the Queen of Heaven. (The word Holycake is yet a family name.) They said that those who ate of it, would see their future partners in a vision. This custom is still observed among us, although we have modified the "vision" into a dream. The drink-offering was passed around from east to west, according to the course of the sun, before it was poured out as a libation. Even now at public dinners the goblet is passed to the left hand, but the liquor is drank in healths instead of being offered to the gods. (Have we in this case improved on the customs of our ancestors?) It is said that a London cabman pours a part of his ale on the ground, without suspecting that he is performing an old religious ceremony.

Honey and water was one of the ancient drinks. The Welsh required a bride and groom to drink it for thirty days after marriage, hence our honey-moon. These customs, which were once part of the universal idolatry, are *as worship* condemned through the prophet Jeremiah.

In Jeremiah xlv. 17, we read the expressed determination of the people who were left after the destruction of Jerusalem to continue their idolatrous practices, and as these were the same as those for which Israel had then gone into captivity, the same description applies. "As for the word that thou hast spoken unto us in the name of the Lord, we will not hearken unto thee, but we will certainly do whatsoever thing goeth out of our own mouth, to burn incense unto the Queen of Heaven, and to pour out drink-offerings to her, as we have done, we and our fathers, our kings and our princes, in the cities of Judah and in the streets of Jerusalem: for then we had plenty of victuals and were well and saw no evil. And when we burned incense to the Queen of Heaven and poured out drink-offerings unto her, did we make her cakes to worship her and pour out drink-offerings unto her without our men? . . . Then Jeremiah said unto all the people which had given him that answer, saying, The incense that ye burned, ye and your fathers, your kings and your

princes, did not the Lord remember them, and came it not into his mind? So that the Lord could no longer bear the evil of your doings. . . . Because ye have burned incense, and because ye have sinned; . . . therefore this evil has happened unto you." So was Judah—Aholibah—filled with the cup of Aholah, her sister Samaria, "the cup of astonishment and desolation."—Ezekiel xxiii. 33.

"Thou hast set mine oil and mine incense before them (saith the Lord God); my meat also which I gave thee, fine flour and oil and honey, wherewith I fed thee, thou hast even set it before them for a sweet savor."—Ezekiel xvi. 19.

"For she did not know that I gave her corn and wine and oil, and multiplied her silver and gold, which they prepared for Baal. . . . I will visit upon her the days of Baalim, wherein she burned incense to them . . . and forgot me, saith the Lord."—Hosea ii. 8-13.

In regard to the use of the word Baalim, in the plural form it represents the all-embracing Baal, not only the great Father, but the sun, recognized as the great beneficent power of nature, to whom all the products of the earth are referable. The worship of this power was the fundamental idea of all oriental idolatry, and may be traced in every country to which the eastern migration reached. The name of Baal or Bel, means governor or lord; it is compounded with whatever words express especial exhibitions of his power. We have Baal-Peor, Baal-Ram, and hosts of others, among them Baal-Zebub, the lord of the fly; worshiped at Ekron; spoken of by Pliny as the fly-god. Also Baal-Sameen, or Baal-Samhan, much revered by the Druids, who called him the lord of death, and who considered him the judge of the dead, as also the Mediator, giving the idea of merciful judge. "The annual solemnity instituted to his honor is yet celebrated in Ireland on the evening of the first day of November, and is called the 'Night of Samhan.'"—*Higgins*.

Baal-berith is the covenant Baal, or the god who enters into covenant with the people. Of this the Lord reminds Israel when her restoration is promised, "I will take away the names of Baalim out of her mouth, and they shall be no more remem-

bered by their name. In that day I will make a covenant for them with the beasts of the field and with the fowls of heaven, and with the creeping things of the ground, . . . and will make them to lie down safely."—Hosea ii. 17, 18.

Thus the Lord asserts His superiority to every conception of Baal, in that he alone can make a covenant of safety for his people.

There is a more than usual mixture of truth and error in this covenant Baal, the Baal-berith of Israel, the Mithra of Persia and of the Druids. Mithra was the mediator, as well as the maker of the covenant, and when at the festival the bull was sacrificed, evil was typically suppressed and earth and heaven rejoiced, the *earth* representing the joy of heaven by the circular dances of the priests and other imitations of planetary motions, still kept up by the Dervishes and Shakers.

The birth of Mithra was celebrated by the Druids, the Persians, and other nations, on the night of December twenty-fourth. The twenty-fifth the Druids called Noel or Nollagh—the day of regeneration, celebrating it with great fires on the top of the mountains. There are accounts of the celebration in Gaul 100 B. C. This was the month of the Roman Saturnalia, when landlords and laborers feasted together—the servant in the palace of his king; the same license appears in the Druidical festival. In Persepolis a remarkable temple front is described, on which is represented a man with wings seated on an arch, which seems to be intended for a rainbow. This figure is described as Mithras Bovinus.

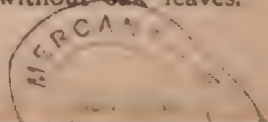
But to return to the Druids. "There are ruins of a Druidical temple at Brimham Craggs, not far from Iseur, now Aldborough, the capital of the Brigantes as well as of all Britain, removed to York, the Celtiberean settlement of Ebora—latinized Eboracum by the Romans, after they had conquered the country. The town was probably built out of the Druidical temple there, of which only three immense pillars now remain. The numerous beautiful Mosaic pavements yet to be seen at Aldborough prove its ancient magnificence. The word Iseur is curious; it signifies Saviour, from the Hebrew Iso, to save. The Persians applied this epithet to the Sun, as Mithra, or the

Sun which saved them annually from the empire of Ahriman, or darkness, the six months of winter. In York one of the streets which runs into the most ancient part of the town called Aldborough, is called Saviour Gate, thus the new citizens imitated the old ones in the names of their streets".—('Higgins Celtic Druids,' p. 195).

To those who had in these strange idolatries darkened counsel, the Lord spake through His prophets: "Thus saith the Lord that created the heavens: God himself that formed the earth and made it. . . . I have not spoken in secret, or in a dark place of the earth. . . . Assemble yourselves, ye that are escaped of the nations, they have no knowledge . . . that pray unto a god that cannot save, . . . there is no God else beside Me, a just God and a Saviour."—Isa. xlv., 18-21.

The Druids celebrated the return of each new and full moon, and even now in some parts of Great Britain the silver crescent is formally saluted, without any idea that the reverence is a remnant of Druidical superstition. The feast of the new moon was among those appointed for Israel, but the idolators sinned in adding vain abominations to the worship of Jehovah, and in adoring the creature instead of the Creator. A sacrifice offered by one created being to another had no meaning. It was the mediator between God and man, who was typified by the appointed offerings, and to the idolatrous priests the Lord said: "Though you offer me burnt offerings and meat offerings, I will not accept them."—Amos v., 22. It is said that the Druids kept Sunday as a feast day instead of the ancient Sabbath, paying especial adoration to the lord of the sky on the day that bore his name. To such vain worshipers the Lord spoke: "I will cause her mirth to cease, her feast days, her new moons, her Sabbaths, and all her solemn feasts, I will visit upon her the days of Baalim."—Hosea ii., 11.

It was on the sixth day after the new moon that the sacred mistletoe was gathered. Pliny says "the Druids held nothing so sacred as the mistletoe, and the tree on which it grows, provided it be an oak. They make choice of oak groves in preference to all others, and perform no rites without oak leaves.



They think that whatever grows on these trees is sent from heaven, and is a sign that the Deity has made choice of that tree. But as the mistletoe is seldom to be met with, when found it is fetched with great ceremony, and by all means on the sixth day of the moon, which with them begins the months and years, and the period of thirty years, which they term an age. They call this plant, in their own language, "all heal," and after preparing for the sacrifice and feast under the trees, they bring up two white bulls, whose horns have been then bound for the first time. The priest, habited in white, mounts the tree, and with a golden hook cuts the mistletoe, which is received in a white cloth. They then sacrifice the victims, praying the Deity to render this, his gift, favorable to those to whom they distribute it.

The "white cloth" is elsewhere described as a short white mantle termed a *sách*. May not the short white garment now worn by women, and called a "sack," have received its name from this one of the priestly robes? This word is said to be in all languages, meaning either a bag or loose garment. In Welsh it is *sachell* or *sach*; in Gael and Irish, *sac*.

Weaver, in his 'Monumenta Antiqua,' says: "The Druids, like the Israelites, looked for a Redeemer. The mistletoe was an emblem of Him who was to come, and the Druids called it 'curer of all ills.'" The oak, in its strength and vigorous life, they considered a fit emblem of the Almighty, and with the mistletoe twining itself among the branches, it represented that tree of life whose "fruit shall be for meat and the leaf thereof for medicine."—Ezekiel xlvii., 12.

Thus continually did they mingle truth and error, for "Ephraim was oppressed and broken in judgment," and "willingly walked after the commandments." "Therefore will I be unto Ephraim as a lion, . . . and none shall rescue him . . . till they acknowledge their offense and seek My face." —Hosea v., 14.

To the priests who taught falsely, the prophets had an especial message: "Wo be to the shepherds. . . . The diseased have ye not strengthened, neither have ye healed that which was sick; . . . therefore I am against the

shepherds. . . . I will search my sheep and seek them out, . . . and I will raise up for them a plant of renown." —Ezekiel xxxiv.

The significance of this expression seems very great, connected as it is with a reproach for not healing the sick. The combined magic and mystery of the oak and the mistletoe, with their professed healing powers, were known throughout the nation, and crowds rushed to obtain a leaf whenever the mistletoe was discovered; this, then, was to the followers of Druidism emphatically a "plant of renown." Isaiah i., 29, 30, has a like allusion: "They shall be ashamed of the oaks which ye have desired, and ye shall be confounded for the gardens which ye have chosen, for ye shall be as an oak whose leaf fadeth." This chapter of Isaiah, although not expressly addressed to Israel, was spoken nearly fifty years before the dispersion or captivity of that nation, and describes the "Sin of Samaria," in which both Israel and Judah were at that time involved. It had been for a hundred and fifty years the court religion of the ten tribes, and seemed to possess a wonderful fascination for Judah. Isaiah calls heaven and earth to witness the rebellion of the children of God, and speaks to them as rulers of Sodom and Gomorrah—a form of address meant to indicate the lowest vices and darkest idolatry. His prophecies include both divisions of the nation, which is also true of those of Jeremiah and Ezekiel, although they prophesied after the captivity of Israel, and were themselves among the captives of Judah. It is supposed their writings were received by their brethren in Assyria, as naturally every possible communication would be kept up during the first years of their separation.

A nation of wise men were these Druids, votaries of science—falsely so called, diviners, soothsayers; watchers of the heavenly bodies, asserters of their own power and skill, prognosticators of judgments on the earth, such as eclipses, which they carefully calculated, and which they foretold with an accuracy terrifying to the ignorant. On them the curse fell, for the Lord had said: "I am the Lord that maketh all things, that stretcheth out the heavens alone, that spreadeth abroad the earth by myself. —Isa. xliv., 24. "I form the light and create dark.

ness" (xlv., 7.) "That frustrateth the tokens of the liars, and maketh diviners mad" (xlv., 25), and surely they were made mad when they strove to mix the paternal relation with the most revolting cruelties. One of their sayings was that a stone is not nearer the earth than the heart of a Druid to his people, and yet one of the offerings to the spirit of Saturn—the Moloch of the Phœnicians, the god of war, to whom fire, both as destroyer and purifier, was sacred—was a wicker frame filled with little children, who were burnt alive to this god. The agonized parents were required to look on, and were forbidden one human cry, the Arch-Druid (or fiend) consoling them by a promise of future happiness to the tortured infants, and of pardon to the hardly less tortured mothers. It was the mixture of the lion and the lamb. The Inspired Word tells of an institution that bears strange likeness to that of the Druids. It was a beast that came "out of the earth, and he had two horns like a lamb, and he spoke as a dragon."—Rev. xiii., 11.

We shudder as we read of these burning children, and are thankful that light has come to us. But not much over a hundred years ago, even in our favored land, a New England divine, unconscious that he was descended from the royal line of Cymric princes, or that his ancestors may have joined in the sacrifice to Moloch, preached that hereafter parents will sing hallelujahs as they see their children "roasting" forever. He was less tender than the loving Druid, for he gave no hope that the torture or the hallelujahs would ever cease. Such is the descent of faith, and our belief in our Israelitish origin may be increased when we find that we have inherited idolatries as well as truths.

In Scotland a newly baptized infant is waved several times over a flame with the words "Let the flame consume thee now or never." The people leap through the mid-summer Bel-fire, while in Ireland the cattle are driven through it. Our children build bonfires (Saxon *bene* or *bone*, a favor,) and jump through the flames. All these customs being reminiscences of the Druidical idolatry, as well as of that which the prophets condemn as the sin of Israel. They caused "their sons and their daughters to pass through the fire to Moloch, which I commanded them

not."—(Jer. xxxii. 35.) "Thou hast taken thy sons and thy daughters whom thou hast borne unto me—thou hast slain my children and delivered them to cause them to pass through the fire."—Ezekiel, xvi. 20-21

The account of their idolatries and, if we had time, their comparison with and likeness to those particularly of India and Persia might be prolonged indefinitely, but I will close this branch of my subject by a short account of the worship of

THE SUN IN TAURUS.

In all ages of the world the nations have hailed with delight the return of spring, and the revivification of nature under the warmth and heat of the sun. His winter absence gave rise to fearful rites of darkness and mystery, but his return was ever a time of joy and gladness. This universal festival we know as May-day, on which day the wise and never-dying astronomer tells us the sun at the vernal equinox, 4000 B. C., entered the constellation Taurus. This gives us about the era popularly known as the Creation, and a double reason for an observance so wide spread that I have called it universal. It is still observed in all parts of Great Britain, among us, and in India and Persia. In Persia it is the "Salutation of Mithras;" forty days were set apart for thanksgiving and sacrifice. Before the rising of the sun the procession was formed. First the High Priest, then a long train of the Magi, in white robes, carrying the sacred fire in censers and chanting hymns. They were followed by three hundred and sixty-five youths, dressed in scarlet. The Chariot of the Sun, decorated with flowers, and drawn by white horses, caparisoned in gold, came next. Then a white horse of exceeding beauty and size, with ornaments of gorgeous gems on his head, in honor of Mithras. The King in an ivory chariot inlaid with gold, was the next spectacle, and following him, his kindred and nobles riding on richly caparisoned camels. This procession ascended Mt. Orontes. The high priest was crowned with a tiara of myrtle and hailed the first rays of the sun with incense and prayers. The Magi sang hymns to Ormuzd the source of blessing, who sent the glorious Mithras to gladden the earth and preserve life. A chorus and prostration

closed the ceremonies. (Compare with reformation of Josiah, 2 Kings xxiii. 1-4.) The rites of the Druids on this occasion are thus described by Davies. (Myth. p. 369.) "In the festival of May, they celebrated the praise of the holy ones, in the presence of the purifying fire, which was made to ascend on high. On the Tuesday they wore their dark garments, on the Wednesday they purified their fair attire, on the Thursday they truly performed their due rites, on the Friday the victims were conducted around the circle, on the Saturday their united exertion was displayed without the circular dance, on the Sunday the men with red blades were conducted around the circle, on the Monday was seen the deluge of gore up to the belt."

The first day of May was known among them as Bal-tein or Bal-tane. A town in Perthshire still has the name of Tillie-Beltane, the hill of the fire of Baal. The remains of a Druidical temple are near, marked by eight upright stones; not far off is a well, still held to be magical, and a procession of the superstitious on Beltane morning walk nine times around it. In some places the boys meet on the moors, where they cut a trench in the sod of sufficient size for them all to stand within it. They build a fire and make a sort of custard, which is eaten, then they make a cake of oatmeal, which is toasted and divided among them in equal portions. They blacken one piece with charcoal, then put all in a bonnet, from which they draw them, being blindfolded; whoever draws the black piece is the one devoted to Baal. Once he was undoubtedly sacrificed to the sun-god, but now he is only required to leap three times through the flames. Baal is then propitiated, and trusted with the fertility of the coming year. Another of the ceremonies still continued is dancing around a May-pole, and all of them tell of the ancient sacrifices and planetary dances.

If these widespread observances do not mark the era of creation, there is still sufficient reason for the commemoration of the time of which Virgil speaks "when the bull with his horns opens the vernal year," because in all the heavens there is no more magnificent group of stars than Taurus and the surrounding constellations. No more significant names than those in Taurus are found in any other sign. They tell of the glory and

might of the conqueror, to us the Saviour ; to heathen nations, Baal, Mithra, Appollo, Hercules, and all the others that personate the lord of the sky, as well as of the heavens above. Let us for a moment consider the names of the stars that have come down to us from earliest ages (the exact meanings I take from Mazzeroth). In Hebrew, Arabic, Syriac and Coptic the word for bull means coming or who cometh. The grand group of the seven stars or Pleiades (congregation of the judge) contains a star supposed to be the central sun, and named Al Cyone—the centre—a fact probably unknown to Maedler when he directed his telescope to it. Another star of the same group means, "centre of revolving." The great Al Debaran, one of the royal stars, means "the leader." There are four of these, according to the Persians, which marked the four colures, Al Debaran in Taurus, Regulus in Leo, Antares in Scorpio, Fomalhaut in the Southern Fish.

Closely following Taurus comes Orion, the grandest constellation of the heavens, and the one that bears the strongest resemblance to a figure. In Hebrew the name means *coming forth*, as light. Of the stars in the constellation four signify *the mighty, the Prince* ; five say, *he cometh* ; three say, *bruised and wounded*, and Rigol, the foot, in the ancient zodiacs, is treading on a serpent. The three orbs of light in his belt point directly to the brightest star in our heavens, well named Sirius—the *Prince*. The apparent entrance of the sun, at the spring equinox, into the leading constellation of this group might well be celebrated by the very stars that sung together at the creation, whether or not they marked that event. Maurice says "I have little doubt that May-day, or at least the day on which the sun entered Taurus, has been immemorially kept as a sacred festival from the creation of the earth and man, and was originally intended as a memorial of that momentous event."

Although the festival of May-day is still observed, there is this fact, however, to be noticed : it has long been in memory of a *past* truth, for in the revolution of years the sun retrograded in his time of crossing the equator and came earlier every year to the stars in Taurus, until at last at the spring equinox, he entered the constellation of Aries. It is said that April fools

day marks that change. If so, I will hazard the conjecture that the event was a surprise to the early astronomers, and the custom of sending on fool's errands told how often they had watched in vain for the coming of that star among the stars that seemed his fitting court of glory. The first of April is celebrated in Persia and is called the Naurutz.

"When Sir Thomas Roe was ambassador at Delhi, this festival was celebrated with astonishing magnificence. When in Persia, some of the ambassador's suite were deputed to congratulate the Shah on the first day of the year. They found him at the palace of Ispahan sitting at a banquet, having his astrologer near him, who rose up ever and anon, and taking his astrolabe went to observe the sun. At the very moment of the sun's reaching the equator he published abroad the new year, the commencement of which was celebrated by the firing of great guns from the castle and city walls, and by the sound of all kinds of musical instruments. ('Celtic Druids,' page 152).

This festival was celebrated in Britain with rites very like those of May-day, but have all passed from memory except the custom of making April fools.

At what date the early astronomers fathomed the mystery of the precession of the equinoxes we cannot tell, but that they accomplished this is certain; they also divided the zodiacs into 360 degrees, and calculated the great cycle of the universe (the Platonic), during which the equinoxes would pass through all the signs, thus numbering the hours that are marked on heaven's dial plate. Stonehenge tells us that the Druids knew all this, and the planetary dances (from which our ballet) tell how they celebrated the movements of the stars. Sixty-six years before Israel was carried into captivity the Lord said "Seek Him that maketh the seven stars and Orion, and turneth the shadow of death into the morning, and maketh the day dark with night. The Lord is his name."—Amos v., 8.

E. BEDELL BENJAMIN.

THE ALTAR AND PILLAR TO JEHOVAH.

X.

"Familiarity breeds contempt," and the rule is not invalidated by the too familiar title at the head of this article. Therefore, should the writer happen to contribute anything further on this subject, it will be under a different caption. But before bidding adieu to the old one, I beg leave to correct a few mistakes—one mistake of commission, another of omission, and two or three mistakes of people in general.

In my last article, which appeared in the May number of this Magazine, I committed a gross blunder in regard to the situation of the niche in the queen's chamber of the Great Pyramid. Nobody seems to have considered it worthy of notice, but possibly this correction of it may call attention to the very important truth in the matter, as standing forth all the more conspicuously for the shadow which it casts in the sunlight. The mistake is this: "Imagining the statue standing in its place, the curious fact of its situation northward of the middle of the east wall may be taken as an indication of the direction from which the original came into Egypt, and in which his bones would return to the 'parcel of ground' given him by his father Jacob in the land of Canaan." This was said of the traditional diorite statue in the niche of the queen's chamber, and of the inference to be drawn from it in regard to the builder of the Great Pyramid. The corrected sentence is this: "Imagining the statue standing in its place, the curious fact of its situation *southward* of the middle of the east wall may be taken as an indication of the direction of its fellow statue in the temple of the Sphinx, to whose side it was destined to be transported." This is in accordance with the absolute fact in the case, from which alone the logical conclusion can be the true one. Whoever has taken the trouble to read my last article must see at a glance that the sentence so corrected would have exactly suited

my more important purpose—that of identifying the traditional diorite statue in the niche with the actual greenstone statue represented and described in Rawlinson's 'History of Ancient Egypt' as one of the two contributed by Cephren to the temple of the Sphinx, whence it has been removed to the Boulaq museum in Cairo. It would have thrown discredit upon the supposition that the two only realistic statues in the long art-history of Egypt represented Cephren, a mere Egyptian Pharaoh, and were contributed by him to one and the same place, at one and the same time. Indeed, it would have comported perfectly with this question of mine in regard to that matter: "Is it not more in accordance with the fitness of things to believe that the person was the prime minister of Cheops and Cephren, and that of his two statues Cephren contributed one to the temple of the Sphinx and the other to the 'secret place' of the Great Pyramid, to signify the authorship of the two grandest monuments on the Gizeh rock by one and the same inspired personage, and their intimate relation to each other as representing the relationship between the earth and the signs of the zodiac."

I may say, therefore, that though it is mortifying to have built on so glaring a mistake, I can gracefully abandon the false foundation in the interest of strengthening the true one. My position now is, that in the singular position of the niche in the queen's chamber, the "altar to Jehovah in the midst of the land of Egypt" points out the "image to Jehovah at the border thereof," though I am far from wishing this conclusion to be accepted till it shall have been proved to a demonstration. At present I claim only that the image in the *temple* of the Sphinx was pointed out by its fellow image in the niche of the queen's chamber, connecting the Great Pyramid with the Great Sphinx in a manner suggestive of something profoundly significant and important.

We now come to my great sin of omission, which some may think a more serious mistake than the one of commission. In my article previous to the last, which appeared in the March number of this Magazine, I made a number of quotations from Professor Smyth to the effect that the first impression of the granite coffer in the king's chamber is that of a sarcophagus,

and I applied this testimony to the support of my idea that the king's chamber was the sepulcher of Joseph, without quoting the Professor's express opposition to like notions held previously by somebody else. Well, "never too late to mend." What Professor Smyth says on the point in question is this:

"Gradually the notion grew that it might be a sarcophagus, that it was a sarcophagus; and that it had been intended for 'that Pharaoh who (in 1542 B. C.) drove the Israelites out of Egypt; and who, in the end, leaving his carcass in the Red Sea, never had the opportunity of being deposited in his own tomb.' But this idea was effectually quashed; for, amongst other reasons, this cogent one—that the Great Pyramid was not only built, but had been closed up, too, in all its more special portions, long before the birth even of that Pharaoh—nay, before the birth of Isaac and Jacob as well—which disposes likewise of the attempt to call the Great Pyramid 'the tomb of Joseph,' whose mortal remains being carried away by the Israelites in their exodus, left the vacancy we now see in the coffer or stone box."—('Our Inheritance,' p. 129).

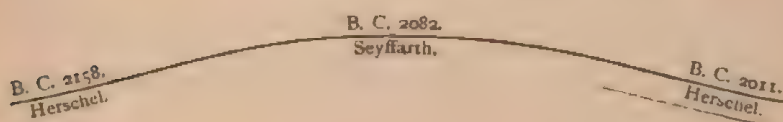
There is no denying the sweeping character of these declarations from the mouth of our highest authority on the subject of the Great Pyramid, and the only alternative is to answer them, or else confess to a gross anachronism in assigning Joseph and the exodus to the fourth dynasty of the Pharaohs, rather than to the nineteenth. It must be said, therefore, that to have been consistent with himself, Professor Smyth should not have written of the granite coffer what I quoted from him in the March number of this Magazine, or else should have written instead of the above: "Gradually the notion grew that it was *not* a sarcophagus, that it was a mere weight-and-capacity measure, and that it had been intended to show to the Anglo-Saxons their inheritance in the weights and measures of the Great Pyramid, together with the Great Pyramid itself, from that most mysterious of ancient personages, Melchizedek." Consistency also requires of the Professor not to have said so much about the unreliability of the Egyptian chronology, or else to have spoken less positively concerning the time of Joseph in Egypt and the date of the overthrow in the Red Sea.

On p. 519 of 'Our Inheritance' he says: "There is actually a dispute between the Egyptologists on the one side, and the Alexandrian-Greek classics on the other, whether there was ever a fourth dynasty at all;" and on p. 523 he says "that the names of the pyramid-building kings of the fourth dynasty of the Egyptologists are, by these same Egyptologists, on the authority of Herodotus, Eratosthenes, Diodorus and Strabo, placed after those which are found in the comparatively late nineteenth dynasty." Now, if these kings and their pyramids can be logically translated from the nineteenth to the fourth dynasty of Manetho, is it not possible that Joseph and the Israelites in Egypt may be logically translated from the nineteenth to the fourth dynasty along with them? In answer to this question allow me to quote from that very learned archæologist, Gustav Seyffarth:

"Since the destruction of Jerusalem it has been a subject of controversy in the Christian church whether the Hebrew text or the Greek translation, *i. e.*, the Septuagint, contained the true chronology. But it is now ascertained that a certain Akiba (Aquila), as was asserted already by Arabian writers and several church fathers, actually corrupted the Hebrew text, in order that the Messiah, whose advent was promised to take place during the sixth year thousand after the creation, might be waited for 1500 years longer than the appointed time. Many have hitherto believed that the chronology of the Bible is discredited by Manetho and the Egyptian monuments. Now it is certainly known that two agree precisely, even to years and days, and that both place the creation and the deluge in the same years and upon the same days. The sojourn of the Hebrews in Egypt was even regarded as a myth. Now it has been positively ascertained that Manetho's shepherd kings (Hyksos) were the Hebrews, and that they established themselves in the land of Goshen in the year 2082 B. C." ('Summary of Recent Discoveries in Biblical Chronology, Universal History and Egyptian Archæology.')

Now, to be able to fall back upon such authority as this for support to my theory of Joseph in Egypt at the time of the building of the Great Pyramid, is no small comfort; for if Jos-

eph was there at that time there is every reason to believe that he was the builder. The difference between 2082 B. C. and Sir John Herschel's last and most approved pole-star date of the foundation of the Great Pyramid, 2158 B. C., is but seventy-six years—only so many years too late, or, as I would say, only so many years after Joseph's accession to power at thirty years of age, and only fourteen years before his death at one hundred and ten, at which time, under the full blaze and effulgence of his monumental wisdom and goodness, it might well be said that "the Hebrews *established* themselves in Goshen." Or, if we take Herschel's other and earlier computation, *a Draconis* at $3^{\circ} 42'$ from the north pole was 2011 B. C. ('Life and Work,' by Smyth, Vol. iii, p. 279), making the foundation of the Great Pyramid, by this rule, seventy-one years *later* than Seyffarth's date of the establishment of the Hebrews in Goshen. Adopting Professor Smyth's favorite method of compromise between different computations of the same thing, the happy mean between the two astronomical dates suits my theory of the foundation of the Great Pyramid by Joseph almost exactly.



Those who believe, with Professor Smyth, that the time of the Israelites in Egypt was near the beginning of the nineteenth dynasty, and that they were driven out of Egypt in about 1542 B. C., say that the Pharaohs of that day were a later dynasty of shepherd kings, of whom Sesostris was the greatest. Seyffarth, on the contrary, says that the time of the Israelites in Egypt was that of the shepherd kings of Manetho, who, by common consent, were of the fourth dynasty; and he says that these shepherd kings were the Hebrews themselves. I see, too, that Mr. F. Cope Whitehouse, A. M., in his very learned paper entitled, "Where is the Land of Goshen?" identifies Joseph with the shepherd Philition, the builder of the Pyramid of Cheops (p. 360), and identifies the Israelites in

Egypt with the Hyksos, the shepherd kings of Manetho, of whom he says that they "gained over nature and the Egyptians the peaceful conquest due to their superior ability" (p. 364). I must say, however, that the Bible, our highest authority on this subject, though it clearly describes a sort of peaceful conquest by Joseph over the Egyptians, in the inspiration and providence whereby he converted king and people from idolatry to the worship and service of the true God, and whereby he became the appointed and acknowledged ruler over all the land of Egypt, does not warrant us in regarding him and his brethren as shepherd kings, but, on the contrary, distinguishes between the prime ministry of Joseph and the sovereignty of the Pharaoh in the words of the latter, "only in the throne will I be greater than thou." It tells us, too, not that the Israelites were the shepherd Pharaohs at the time of the exodus, but that they were bond-servants to the Egyptians, and had been such for over a hundred years. According to Moses, the shepherd kings were the Pharaohs, and the Israelite shepherds were at first highly honored by them, not only because of the exalted character and position of their brother Joseph, but also because of their long line of shepherd ancestry and because of their preëminent qualification for the care of the Pharaohs' cattle.

Against this last sentence I see a whole host of people rising up and exclaiming: "Every shepherd an abomination to the Egyptians!" Well, I say so too, but "an abomination" in a sense that constituted an all-powerful argument with the Pharaoh in favor of his granting to Jacob and his sons "the best of the land of Egypt" for their residence and for the pasturage of their cattle, where Joseph could conveniently "nourish his father and his brethren with bread, as a little child is nourished," during the famine, and where he could make the "men of activity among them rulers over the cattle" of the Pharaoh. If the shepherd Israelites had been "an abomination to the Egyptians" in the sense of "something detestable, hateful, wicked or shamefully vile," they would have been banished from the land of Egypt altogether, or else consigned to the very worst part of it, *i. e.*, to "the Wadi Tumilat," where the Canon Rawlinson places them, and of which he says that it "offers but a

thin thread of verdure along the line of the fresh water canal." On account of the supposed odium of shepherds in the eyes of the Egyptians, most commentators banish them to the same outlandish and uninhabited region. As a fair specimen of the common opinion on this subject, I may quote from Mrs. A. M. Searles' translation of M. Lecointre's "Campaign of Moses," in the last number of this Magazine: "One of the reasons why Joseph had placed his father in this land was the hatred the Egyptians felt toward shepherds. There were then no Egyptians in the land of Goshen; consequently it was not, properly speaking, in Egypt. This explains why it is said in Genesis: 'Israel dwelt in Egypt, that is, in the land of Goshen.' Really the ancient limitation of Egypt was the river Nile, which separated it from Arabia; thus the Septuagint says, *Goshen in Arabia*. This circumstance explains very clearly the facility with which the Israelites were installed in their new homes. Really the country, not being protected by the Nile against the invasion of robbers, could not have permanent homes, and was only suitable for nomadic tribes. Therefore the small tribe of Jacob, composed of not more than four or five hundred persons, and several thousand head of cattle, had only to erect their tents, with the permission of Pharaoh, in some unoccupied district, and to send their flocks to graze in the green pastures of the Nile, to find themselves regularly established there."

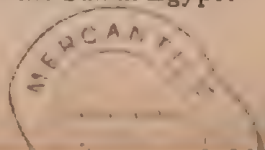
What a commentary this on the loving and all-powerful provision made by Joseph for the comfort and welfare of his father and brethren; on the message sent by him, with the conveyances, to his father: "God hath made me lord of all Egypt: come down unto me, tarry not: and thou shalt dwell in the land of Goshen, and thou shalt be near unto me, thou and thy children, and thy children's children, and thy flocks, and thy herds, and all that thou hast. And there I will nourish thee, for yet there are five years of famine; lest thou and thy household, and all that thou hast, come to poverty!" What a commentary, too, on the words of Pharaoh to Joseph: "The land of Egypt is before thee: in the best of the land make thy father and brethren to dwell; in the land of Goshen let them

dwel: and if thou knowest any men of activity among them, then make them rulers over my cattle!"

Mr. F. Cope Whitehouse brings abundant proof to show that the land of Goshen, or of Rameses, the very best part of the land of Egypt, and therefore the best populated, was the Fayoum, the Arsinoite Nome, where Joseph's canal (the Bahr-Jousuf) is likely to have been in progress of construction at the time of his settlement of his father and brethren there, and where the Pharaoh is most likely to have kept his cattle. To this highly-favored spot, a little to the southwest of the royal residence, Joseph's father and brethren were assigned because of the fact that "every shepherd was an abomination to the Egyptians," to the shepherd Pharaoh no less than to any of the rest of them. This reason for such great partiality in the bestowment of favors ought long ago to have suggested the probability that the word "abomination" had anciently a meaning the very reverse of that which now attaches to it. To harmonize with the plain facts in the case, the reason in question is simply this: "For every shepherd is a pastor, a reverend, a dominie, a sacred personage, in the eyes of the Egyptians." That such was the meaning of the word "abomination" in good old Anglo-Saxon, probably at the time of King James' translation of the Hebrew Scriptures, and possibly inherited from the idolatrously-inclined Israelites in Egypt and Canaan, is evident from Webster's "obsolete" definition of the word "abominable." For this he gives us "excellent, superior, excessive;" and his first illustration is from Webster in 1607: "Fare! by Sesu (Jesu)! O, there is most *abominable* seer (cheer)." The next is an indicated passage by G. P. Marsh: "Juliana Berners, lady prioress of the nunnery of Sopwell in the fifteenth century, informs us that, in her time, 'a *bomynable* syght of monkes' was elegant English for 'a large company of friars.'" These fifteenth and seventeenth century meanings of the word "abominable" are in perfect agreement with the motive ascribed to the Pharaoh for assigning the father and brethren of Joseph to "the best of the land of Egypt," namely, "every shepherd an abomination to the Egyptians." In the light of this explanation, we see the significance of the ques-

tion of Moses to the Pharaoh of the hard heart: "Shall we sacrifice the abomination of the Egyptians before their eyes, and will they not stone us?" (Ex. viii, 26) for what the Israelites proposed to sacrifice was cattle (Ex. x, 25, 26); and cattle were sacred to the Egyptians, because of their symbolization of Osiris by the sacred bull. So, too, the designation of "Ashtoreth" as "the abomination of the Zidonians" means simply that she was the special object of their reverence and worship; and it is easy to see how an abomination in this sense to an idolatrous people became an abomination in an opposition sense to the worshipers of Jehovah. The same principle applies to all the "abominations" mentioned in the Bible.

Now, from a consistent and common-sense understanding of the Mosaic record, it is clear that the shepherd kings of the time of the Israelites in Egypt were not the Israelites themselves, but the Pharaohs; and the question arises: Does the Bible give any intimation as to whence they came and whither they went? I think it does. Near the end of the fourth chapter of 1st Chronicles we read that certain princely families of the tribe of Simeon "went to the entrance of Gedor, even unto the east side of the valley (of the Jordan), to seek pasturage for their flocks. And they found fat pasture and good, and the land was wide, and quiet and peaceable; for they of Ham had dwelt there of old." What "they of Ham" if not they with whom these Simeonite shepherds had been so well acquainted in Egypt? *i. e.*, they of the fourth dynasty of shepherd kings, previous to their peaceable conquest of their brother Hamites in that similar "fat pasture and good," the valley of the Nile? Then as to whither they went when the Mizraimites reasserted their own rightful sovereignty and expelled them as foreign intruders? In Amos ix, 17, we read: "Are ye not as children of the Cushites unto me, O children of Israel? saith Jehovah. Have not I brought up Israel out of the land of Mizraim? and the Philistines from Caphtor? and the Syrians from Kir?" That is to say, in respect to the latter, "Have not I brought up the founders of Baal-Bek, the City of the Sun in Cœle-Syria, out of Kir-Heres, the City of the Sun in Egypt?"



The fourth dynasty came to an end and disappeared from Egypt during the forty years' wandering of the Israelites in the wilderness ; and its last Pharaoh, whom I take to have been the builder of the pyramid of Abu-Roash, is most likely to have led his people forth and to their final resting place by the isthmus of Suez and along the coast of the Mediterranean sea, transferring the name of Aven, and the pastoral life associated with it, from the valley of the Nile to the valley of the Orontes.

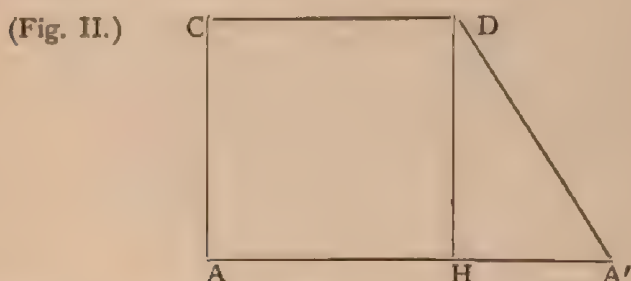
J. W. REDFIELD.

THE CORE MASONRY AND THE GREAT WEEK OF PROPHECY—2,520 YEARS.

In the January number of THE STANDARD, at the top of page 639, will be found the following valuable extract from a work by the Rev. Alexander Mackay: "(B.) . . . The blocks of the core of the structure were set off, accurately in the long run, to the *same slope* as the batter of the finished casing was to be. It appears to me, that this proposition, if proved, will put an end to disputes regarding the length and height of the present masonry, and will enable us to test the much vaunted measures of Mr. W. Flinders Petrie. Even he must admit that *some law* regulated the positions of the courses. Otherwise, why are they of uniform height throughout each course, and why (as pointed out by Petrie himself, in his 168th paragraph, on page 212), are there on the "core . . . lines drawn on the horizontal surfaces, showing where each stone was to be placed on those below it?" Evidently there was no haphazard work.

PROOF No. I. The law indicated above is proved by the observations recorded in 'Life and Work,' at pages 299 and 165. First (page 299) we have the angular measurements of Mr. F. Ayrton; these, although evidently not very accurate, gave $41^{\circ} 40' 13''$ as a mean value of the angle of rise measured at the corners. Then (page 165) Professor Piazzzi Smyth measured the angle of rise of the present faces. The angles observed ranged between $51^{\circ} 39'$ and $51^{\circ} 59'$; the mean for the four faces was $51^{\circ} 48'$. If we compare these angles with the $41^{\circ} 59' 18.7''$ for the arris, and $51^{\circ} 51' 14.3''$ for the side of the building when enveloped in its casingstones, making due allowances for the weathering of the sides and the great hindrances which render accurate observation a practical impossibility, it will, I think, be evident that, if we *cut off the sharp corners* of the present courses, the building will be precisely *similar* to the

the core as represented in Fig. I. In Fig. II is represented one of these casing stones. $\angle A' = 51^\circ 51' 14.3''$.



$AA' = AH + HA' = CD + DH \times \cot. \angle A' = CD + DH \times \pi$. $CD =$ (according to H. Vyse) $51\frac{1}{2} \pm$ (See *Standard* for November 1884, on page 531). CD (minimum) according to Petrie $= 62 - 8 = 54$. From page 26 of 'Our Inheritance' I find, that, according to Vyse, $DH = 60 \pm$ while Petrie's value is 58.85.

	Vyse.	Petrie.	Mean.
So $A'H = DH \times \frac{\pi}{4} =$	$47.12 \pm$	46.22	$46.67 \pm$
$AH = CD =$	$51. \pm$	54.	$52.5 \pm$
$AA' =$	$98.12 \pm$	100.22	$99.17 \pm$

As Petrie gives (108—8) as a minimum value of AA' we may take mean value of Vyse and Petrie as 99. Therefore present base $= 9140 - 2 \times 99 = 8942 \pm$ (British inches.)

PROOF No. II. This result agrees very fairly with the 8949.6 of Mr. Jomard as in a smaller measure, viz., that of the height, he estimated the probable limit of his error at 8 inches. At first sight, however, it appears quite irreconcilable with the 9001.5 of Petrie. But we must take along with this his remarkable theory of the curvature of the masonry. This would reduce the breadth *under the centre* to (*vide* pp. 43-4 of his book) $9001.5 - 2 + 37 = 8927.5$ and under the passages, which are

about 300 inches from the centre, the breadth would be, roughly, $8932 \pm$

So we have base side

Vyse, 8952.

Petrie, 8932.

Mean = 8942.

We have thus, by two independent methods, obtained 8,942 as the most probable length of the base. As the casingstone length can hardly be much less than 99, the value obtained by the first method is a maximum value, whilst the length found by the second method must, if compared with the measures of Davison, H. Vyse and M. Jomard be held to be a minimum. So the base side cannot be greater than, and can hardly be less than, 8,942 British inches.

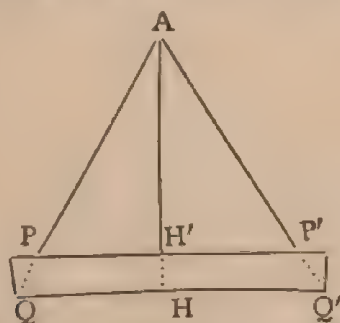
PROOF III. If our theory be correct—

$$\text{Height : base} :: 1 : \frac{\pi}{2}$$

$$\text{Or height} = \frac{\text{base}}{\frac{\pi}{2}} = \frac{8942}{\frac{\pi}{2}} = 5692.6.$$

We shall now see whether this agrees with the best measures of the height:

Petrie has fortunately measured the sides of the platform. He asserts that it is not an exact square; but along with this must be taken his assertion that the S.W. corner is higher than the N.E. by 1.3 inches. Certainly his values of the sides of the base, given at top of p. 38, are practically equal:



(FIGURE III.)

A = apex of present masonry if continued
 PP' = platform side.
 QQ' = bottom of 202nd course of masonry.

According to Petrie (p. 43) PP' is something between 432.5

and 438.7. The angles at Q and Q' are equal to $51^{\circ} 51' 14.3''$. Height AH : base QQ' :: $1 : \frac{\pi}{2}$, and QQ' = PP'.

Therefore AH =

$$\left. \begin{array}{l} \text{Minimum } \frac{432.5}{\frac{\pi}{2}} = 275.3 \\ \text{and} \\ \text{Maximum } \frac{438.7}{\frac{\pi}{2}} = 279.3 \end{array} \right\}$$

Now according to Le Pere and Coutelle the height of H', the top of the platform, above the pavement is 5,435 British inches, while the mean value of the same height calculated by Professor Piazzi Smyth from a large number of measures including his own, was 5,440. Deducting from these HH' (= height of 202nd course = 22) we obtain for values of the height of QQ' above the Pavement 5,413 and 5,418. Combining these with maximum and minimum values of AH, calculated above from Petrie's date, we have :

	Le Pere and Coutelle.	Mean (Piazzi Smyth)	Le Pere and Coutelle	Mean (Piazzi Smyth)
Height of H above Pavement	5,413.	5,418.	5,413.	5,418.
Height { Minimum	275.3	275.3	.....	.....
AH { Maximum .....	.....	.....	279.3	279.3
Height of apex above pavement =	5,688.3	5,693.2	5,692.3	5,697.3

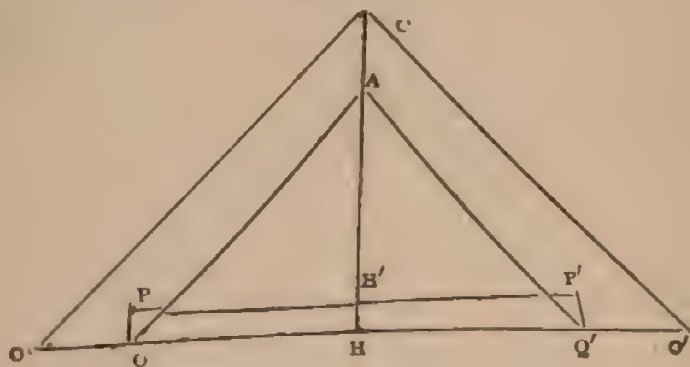
Mean of these four values, = 5,692.8

Height already calculated from π angle, = 5,692.6

Mean, - - - - - 5,692.7

PROOF IV.—Let A, as before, represent the apex of the present masonry continued, and PP' and QQ', the top and bottom of the 202nd course. Also (Fig. 4) let C, CO and CO' represent the apex and sides of the ancient building when enveloped in its casing stones. Then, according to our theory, O Q = O' Q' = base of lowest casing stone = 99.

FIGURE IV.



The height of C above the pavement is known to have been 5818.8 British inches. Therefore,

Height of C above pavement	=	5818.8	5818.8
Height of H } Le Pere & Coutelle	=	5413.	
above pavement { Mean (Piazzi Smyth)	=		5418.
Vertical interval C H	=	405.8	400.8
Mean = 403.3.			

$$OO' = CH. \frac{\pi}{2} = 403.3 \times \frac{\pi}{2} = 633.5$$

Petrie's two values of $PP' (= QQ')$ are 432.5 and 438.7, so we may take for a *rough* value the mean of these two.

So QQ'	=	435.6±
$OO' - QQ' = 2 \times OQ$	=	197.9±
or OQ	=	98.95±
By theory	=	99. }

PROOF V.—I shall now proceed to show that the dimensions we have just obtained were exactly those needed to bring the Pyramid into agreement with the Scriptures of the prophets. I assume that the plan of the ancient building was that exhibited in Plate XXII., Fig. 2 of 'Our Inheritance' (4th ed.)

But this is open to the serious objection that a square, equal in area to the vertical meridian section of the original building, would have a side of 5151.65, whilst the periods of prophecy demand a square with a side of 2×2520 . In the grand gallery a height of $\frac{2520}{8}$ has been found.

I therefore ask: What should be the dimensions of a pyramid with a π angle of rise, in order that a square equal in area to its meridian vertical centre section should have a side of 5040?

Let b = base of the Pyramid and h = height.

$$\text{Then } h = \frac{b}{\pi} \text{ and } \frac{hb}{2} = \frac{b^2}{\pi} = (5040)^2$$

$$\left\{ \begin{array}{ll} \text{Or, } b = 5040\sqrt{\pi} & = 8933.17 \text{ (Pyramid inches).} \\ & = 8942.1 \text{ (British inches).} \\ \text{And base obtained by} & \\ \text{foregoing methods} & = 8942.0 \end{array} \right.$$

$$\left\{ \begin{array}{ll} \text{Height} = \frac{2 \times 5040}{\sqrt{\pi}} & = 5687.03 \text{ (Pyramid inches).} \\ & = 5592.717 \text{ (British inches).} \\ \text{Mean values obtained} & \\ \text{from measures} & = 5692.7. \text{ (See Proof III).} \end{array} \right.$$

I have now merely a word to add in regard to Mr. W. Flinders Petrie's measures: In the foregoing I have proved by five independent methods, that the height of the platform is not less than 5435 inches, and probably somewhat nearer to 5440 than that quantity. Now Petrie's *maximum* value of that height is only 5409.2. So we see (1st) that he erred in selecting a distance plane higher by 20 inches than that chosen by Prof. Piazz Smyth, and (2nd) that, even after allowing for those 20 inches, there remains an error of 5.8 to 10.8 inches.

Then his mean value of the base side is 9001.5. To this, with a π angle of rise would correspond a height of 5730.5.

Now according to him:

	At N. E.	At S. W.
Height of botton of 202nd course,	5385.7	5386.8
Values of vertical interval A H, calculated from his data, (<i>Vide</i> Fig. III),	279.3	275.3
Total height of apex A, (Fig. III),	5665.0	5662.1

So, whilst the heights *measured* by him are from 27.7 to 30.6 *less* than the true height, the height calculated from the base side is 37.8 *greater* than that height.

From the last paragraph of page 37 of his book we find that in measuring the base side he took "the mean optical plane which would touch the *most prominent points* of all the stones." In other words, he drew his lines through the *sharp corners* of the courses, not perceiving that such lines *must fall about a couple of feet outside the true ends of the base*, as will be evident from (Figure I), or from Plate IX of Petrie's book. What then becomes of his value of the curvature, deduced from a base side too large by about four feet? Then from his description of the platform on page 43, I infer that although he measured the sides several times in two successive years, he did not notice any curvature in them.

R. COURTENAY.

TANNA, Bombay Presidency, July, 1885.

THE CAMPAIGN OF MOSES.

FROM THE FRENCH OF M. E. LECOINTRE.

BY MRS. A. M. SEARLES.

CHAPTER III.—GEOGRAPHY OF MOSES CONTINUED. PIHAHIROTH— MIGDOL—BEELZEPHON.

The Hebrews arrived at Pihahiroth, and rested there several days before being surprised by Pharaoh's army. We find in the institution of the Passover explicit instructions as to the duration of this sojourn.

We read in chapter twelve, at verse eighteen, that this feast

lasted seven days, from the evening of the fourteenth of the month to the evening of the twenty-first, during which time they were forbidden under penalty of death, to eat of leavened bread (verses 15 to 20). The first and the last days were held particularly sacred: *Dies prima erit sancta atque sollemnis, et dies septima eadem festivitate venerabilis* (v. 16). They were obliged during these days to keep a sabbatical quiet, and to observe the Passover feast. *Nihil operis facietis in eis, exceptis his quæ ad vescendum pertinent; et observabitis azyma* (v. 17). For in that same day will I bring your army out of the land of Egypt. *In eadem ipsi die educum exercitum vestram de terra Egypta.*

To what day do these words *ipsa die* refer? Is it the first or the seventh? Grammatically and rationally speaking it is the seventh.

The motives for the veneration of the first day, as pointed out in verses thirteen and fourteen are the witness and monument of the protection, accorded to Israel, during the visitation of the exterminating angel. *Videbo sanguinem, et transibo vos nec erit in vobis plaga disperdens, quando percussero terram Egyptis. Habebitis autem diem hunc in monumentum, et celebrabitis eum solemnum Domino, in generationibus vestris cultu sempiterno.* (Verses 13 and 14.)

As to the seventh day the motive for holding it particularly sacred is that it was the day on which the Lord led them from the land of Egypt, as quoted before.

Many claim that *ipsa die* points to the day on which Pharoah permitted them to depart. I cannot conceive whence they draw these conclusions; but it is quite certain that it was *not* on *that* day that the Lord led them forth out of Egypt, but on the contrary, it *was* the day on which the people assembled at Succoth, in the land of Egypt.

From there the time was employed as follows: The morning of the fifteenth they left their houses, situated in Rameses (the land, not the city); in the evening they arrived at Succoth; the sixteenth at Etham; the seventeenth at Pihahiroth; and the morning of the twenty-first (*Jamque advenerat vigilia mati-*

tuna, xiv, 24) they went out of the Red Sea and the land of Egypt into the desert of Sin, or Etham.

The absolute interdiction of heaven during the seven days of the Passover (xiii., 7, 8) shows clearly that up to the time of their exit from the Red Sea the Hebrews had only eaten the cakes of unleavened bread of which they had borne the dough upon their shoulders, and which they had baked at Succoth. This shows us that they started with a sufficient supply to last them seven days.

The order given by the Lord at Etham points out in these words the position of the Hebrew encampment after the change. *Loquere filius Israel; reversi castrametentur e regione Phihahiroth, quae est inter Magdalum et mare contra Beelsephon; in conspectu ejus castra ponetis super mare* (Ex. xiv., 2).

Numbers conveys the same idea, but with some variations of expression. *Inde egressi venerunt contra Phihahiroth quae respicit Beelsephon, et castra mutati ante Magdalum.* (Num. xxxiii., 7.) The Lord further gives an idea of what Pharaoh will think of the situation of the Hebrews. "*Dicturus estque Pharaon super filiis Israel, coarctati sunt in terra, conclusit eos desertum.* (Ex. xiv., 3)"

The following describes the position of the Egyptian army when it surprised the Israelites. *Cumque persequerentur Egyptii vestigia praecedentium, repperunt eos in castris super mare; omnis equitatus et currus Pharaonis et universus exercitus erant in Pihahiroth contra Beelsephon. Cumque appropinquasset Pharaon, levantes filli Israel oculos, viderunt Egyptios post se et timuerunt valde. Clameverunt que ad Dominum.* (Ex. xiv-9 and 10.)

Finally the Israelites pass the Red sea. *Profectique de Pihahiroth transierunt per medium mare in solitudinem.* (Num. xxxiii., 8.)

Ambulaveruntque tribus diebus per solitudinem, et non inveniebant aquam. (Ex. xv., 22.)

It is evident that the change of camp placed the Hebrews in a difficult position, for when Pharaoh learned that they were at Pihahiroth he cried: "*Coarctati sunt,*" etc. "They are entangled in the land and the wilderness hath shut them in." (Ex. xiv., 3.) Seeing no way for their escape he determined to sur-

prise them. The Lord hardened his heart and he put his army in pursuit of them.

But this land which entangled them, this wilderness which shut them in, must present themselves to us in the form of mountains, else they could not have hindered their flight. Really, "the proper translation of the Hebrew term 'Middebar' is mountain, although it is ordinarily translated by wilderness." (Dom Calmet.) It is evident, then, that flight was impossible, and as Moses shows them to us between Migdol and the sea, it follows that Migdol, that is, the mountain, is the obstacle which shuts them in.

On account of etymological reasons Mons. Abbe Vigouroux does not admit that this conclusion is correct. He says: "The word Migdol is found in the Egyptian inscriptions under the form *Malk*; it means fortress, and proves that Migdol must have been situated on the frontier, between Egypt and the desert." And in another place he says: "Migdol cannot mean a mountain, but a strong place."

If the etymology was certainly exact, this would not prove his theory. Even though the word Migdol signified a fortress, it might, nevertheless, also designate a mountain, as St. Bernard, The Table, and others; and the fortress need not necessarily be placed upon the frontier: witness Vincennes, le Mont Valerien, etc.

He says further: "We must not put too much stress upon the word *coarctati*, because *neboukim*, the corresponding word in the original simply means 'muddled, led astray, lost.'" But then it would be necessary to translate the passage, *Coarctati sunt in terra*, by "They are lost in the land," which would be contrary to sense, for they are not lost in any sense of the word, and know very well that they are between Migdol and the sea, opposite Beelzephon; or else we must say they are muddled or troubled in the land, which would be nonsense, for there was no reason why they should be troubled there more than elsewhere. The word *neboukim* then has, necessarily, another sense, and the one pointed out by St. Jerome is as reasonable as it is satisfactory.

We see that if the Hebrews are surrounded by mountains

and deserts, that is not to say that they themselves were in the desert. This is proved by the text: *Profectique de Pihahiroth, transierunt . . . in solitudinem*: "Having departed from Pihahiroth they went into the desert;" they were not in the desert then when they were at Pihahiroth.

Really they rested there three days, and must have found water there, since they had no lack of it until after they had crossed the Red sea; whence we must conclude that a canal, (no doubt derived from that at Etham) or perhaps several branches came thus far, but stopped at the western shore of the Red sea.

For, to satisfy the thirst of so great a multitude the springs were insufficient. Not only because of the great quantity of water required, but still more because being confined in narrow limits, it was not accessible by so great a multitude; a little calculation will give us an idea of the operation.

Estimating at three millions the number of men and beasts to be supplied, at the same rate that is allowed to sailors, both for cooking and drinking, viz.: one and three-quarters pints each, the Israelites drank daily the contents of a canal 3.3 feet deep, 6.5 feet wide and 14,764 feet long. If we suppose these drinkers to be ranged upon two banks, each one occupying 19.5 inches of space, and allowing each one two minutes to take position, drink and go away, the operation would occupy five and one-half hours. Thus we see it was no small thing to satisfy the thirst of the Israelites.

The texts that we have cited do not employ exactly the same language to express the same thing. In searching for their points of harmony we gain much additional instruction.

Let us first of all examine minutely the meaning of the prepositions, *e*, *contra*, *ante*, *in*, which determine the position of the different objects in question. *E* or *Ex* indicates separation, remoteness, and signifies far from, outside of, above or below; and we translate *e regione Pihahiroth* by "down below Pihahiroth," for we see the Egyptians in Pihahiroth occupy quite an elevated position; since it is in lifting the eyes—*levantes oculos*—that the Israelites perceive them. *Contra*, in speaking of place, means opposite, on the other side, opposed to or

facing. *Ante*, by, before, in front of, in advance, in presence of. *In*, by, in or upon.

These prepositions can only be applied to those objects which present at least one front, or in a word a predominant dimension which fixes the attention, as, in a street of which the houses are exactly opposite. Evidently they are looking each other squarely in the face. The point in question would demand above all that the façades be parallel, then that the dividing walls coincide. In any other case they are more or less oblique, each in relation to the other. An object on the façade as a gas lamp, will be opposite a house when a perpendicular line drawn through that object shall be opposite the centre of the house. But if the point in question were two lamp posts, this reasoning would not hold good in the same sense. For we should be obliged to introduce a predominating dimension; for example, the direction of the street in which they are placed; then they will be opposite each other according as the line that connects them be parallel or perpendicular to that direction.

For the camp of Israel the dimension or predominating direction is evidently the line of the bank or shore. Now as Exodus indicates it by *super mare* and Numbers by *ante Magdalum*, it must be (to identify these accounts as having reference to the same thing) that Migdol extends along the shore and parallel to it; then it is a chain and not an isolated mountain. We see very plainly the camp upon the shore, between the mountain and the sea; but in which part of the shore? At the beginning, in the centre, or at the end? A landmark is necessary which will determine the sense. There is one: it is Beelzephon.

This is in fact what God had said to Moses: *In conspectu ejus (Beelzephon) castra ponetis super mare*. You shall place the camp opposite to Beelzephon, on the sea shore — *e regione Pihahiroth, contra Beelzephon*; at the foot of that part of Pihahiroth which is opposite to Beelzephon — *Quae respicit Beelzephon*;" which looks at Beelzephon.

Pihahiroth—what is it? Moses tell us it is situated between Migdol and the sea: *Pihahiroth quae est inter Magdalum et mare*;—then it is the plain that descends from the mountain

chain to the sea; or rather the high part of that plain where are situated the passes through which the Egyptians defiled to their camp on the heights, which are in Pihahiroth; *omnis equitatus et currus Pharaonis et universus exercitus erant in Pihahiroth*; while the Hebrews on the shore were opposite Pihahiroth—*contra Phi.* . . . at the base of a certain part of Pihahiroth, *e regione Phi.* . . . that part which is opposite Beelzephon, *contra Beelzephon*, which looks upon Beelzephon, *quae respicit Beelzephon*. It is there that taken by surprise, they learned, in lifting up their eyes, that they have the Egyptians in their rear; *levantes filii Israel oculos, viderunt Egyptios post se*.

It was at Etham that Moses spoke to the people to designate the next camping ground, upon the shore in front of Beelzephon, an indication that, to be understood, it was necessary that the people should be acquainted with Beelzephon. This certainly could not have been the case with the most of them; they must then have been able to perceive it from the place where they were assembled; and as it was distant a day's journey, (about six or seven leagues), it could only have been some mountain whose peak was easily distinguished. We notice still farther, that the camp was placed at the foot of that part of Pihahiroth which overlooked Beelzephon, that part being necessarily along Beelzephon itself; that length must have been such as would accomodate so large an army; this could only be the case with a mountain of a certain importance, and not with an object of limited dimensions, as a tower, a fortress or some such edifice.

All the action took place upon the Egyptian bank; it is there, then, that the chain of Migdol is situated, that which, parallel to the Red sea, trends north and south; and Beelzephon, which, as we now see, forms a part of it; for it could not have been outside of it. Above all it cannot be between the chain and the sea, that is to say to the east of the chain, for then it would be *in* Pihahiroth which is between Migdol and the sea; and we should not be able to satisfy all the conditions of the seat of the camp. In fact if we put the camp at the foot of Beelzephon, by the side of the sea, it will no longer be *before* Migdol, as

Numbers tells us; and if we place it at the foot of Beelzephon by the side of the chain, it will no longer be upon the border of the sea, as Exodus puts it. Neither can we place Beelzephon on the other side, that is to say to the west of the chain; for in that case Pihahiroth, which ought to be between Migdol and the sea, would in fact look upon Migdol on the one side, and upon the sea on the other, but in this case we could not satisfy this text in Numbers, *Pihahiroth quae respicit Beelsephon*.

We cannot then place Beelzephon either to the north or to the south, or in the chain of Migdol. But the Hebrews were camped at that time in front of Migdol, *ante Magdalum* (Num.), and before Beelzephon, *contra Beelsephon—in conspectu ejus* (Ex.), and in order to satisfy this double condition Beelzephon must be in the chain itself, that is to say, it must make a part of it.

These different texts, instead of contradicting each other, combine to define the position of the camp: It extended north and south along the shore of the Red sea in front of the range of Migdol, opposite one of the principal mountains named Beelzephon.

The part of the plain of Pihahiroth by which the Hebrews had marched from Etham to reach their camp, was the only part supplied with water, from thence it was desert, *conclusit eos desertum*. The canal which conducted the water could then go no farther, so that the Egyptians were able to double it with their chariots, in the same manner as the Israelites on arriving at the entrance to the desert some days before, had doubled that at Etham. The Israelites were surprised by the Egyptians and only perceived them when they had come very near, *cumque appropinquasset Pharaon*. They had not then marched by the open plain, but came from behind the mountains, which implies the existence of defiles practicable for chariots. They came out in the rear of the Hebrews, *viderunt Egyptios post se*; that is to say, from before Beelzephon, *erant in Pihahiroth, contra Beelsephon*.

All of the conclusions of this investigation are exactly in accord with the information of the Talmud, the only source of

instruction, which, outside of the Bible, can present any authority. I quote from Pere Sicard: "The Talmud makes of Mount Migdol and Mount Beelzephon a single continuous and uninterrupted mountain. It adds that this mountain has two entrances. That they were worshiped by the Egyptians, and that there were oracles there; that these two passes were Pihahiroth, and that the mountain opened suddenly to give a passage to their fathers," evidently meaning the fathers of the Egyptians. This agrees with our interpretation, with this additional particular, that Pharaoh came by two passes or defiles; whence we learn that perhaps Beelzephon turned two ways to the north and to the south.

The chariots in their passage encountered no obstacle, neither in the plain, nor in the sea, *via sine impedimento*. This shows that the passage was free and that the incline was gentle and continuous. But having arrived in the midst of the sea, the wheels dragged, the chariots sank and disappeared in the depths; while the men, frightened, leaped down and fled. But Moses extended his hand over the water which came again and engulfed them.

The disappearance of the chariots in the depths, *in profundum*, before the return of the waters, evidently signifies that they were swallowed by the soft ground of the sea bottom, which yielded under their weight, *devoravit eos terra*. "The earth has devoured them," says the song of thankfulness sung by the Israelites.

This ground could only have been the soft mud and slime, or moving sand of the sea bottom. We know by Habakkuk that it was soft mud, *viam fecistis in mare equis tuis, in luto aquarum multarum*: "You have made a road for your horses in the sea, upon the mire of the deep waters." (Hab., iii., 15.) According to the Saga the surface appeared like any land and was covered with sea-wreck. *Ex aqua quae ante erat, terra arida apparuit, et in mare Rubro, via sine impedimento, et campus germinans de profundo nimio*. "There where had previously been only water, appeared dry land, in the Red Sea a way without obstacle, and in the great depths a field covered with vegetation." (xix., 7.) [TO BE CONTINUED.]

THE DISTANCES AND DIAMETERS OF THE SUN AND MOON.

The May, 1885, number of the "Monthly Notices of the Royal Astronomical Society" contains a paper by Mr. W. G. Thackeray, of the Royal Observatory, Greenwich, in which he gives the results of a discussion of the observations of the apparent diameter of the sun during the years 1861-1883, and those of the apparent diameter of the moon during the years 1856-1883. The final results at which he arrived are:

Mean apparent diameter of the sun = $32' 2.50''$.

Mean apparent diameter of the moon = $31' 8.20''$.

Adopting Adams' value of the moon's mean equatorial horizontal parallax, $57' 2.31''$, and the equatorial diameter of the earth to which I was led from Pyramid data some time ago, 7918.0138 Pyramid miles, the above apparent diameter gives the actual diameter of the moon = 2161.275 Pyramid miles. It is evident, therefore, that the diameter I had obtained and given in a communication in the *Banner of Israel*, of August 31, 1881, 2157.2 Pyramid miles, is incorrect, and that the equations from which it had been derived must be modified or discarded altogether. I have, however, for some time had reason to doubt whether equations derived directly from Pyramid measures could be relied upon, and have especially doubted whether we were justified in assuming that the distance of the sun was correctly represented by the height of the Pyramid and the 9 : 10 theory, and whether the sun and moon distances and diameters could not be more correctly derived from important earth measures. The most important of the earth measures after the polar and equatorial diameters would, I assumed, be the coördinates of position of Jerusalem and the Great Pyramid referred to the earth's centre. Proceeding then to test this view, and commencing with the position of Jerusalem, I at once obtained the following remarkable result:

The diameter of the earth in the latitude of Jerusalem multiplied by the sidereal period of the moon in mean solar days, and divided by 100 = 2161.3285 Pyramid miles which differs from the above astronomical determination of the moon's diameter by only 0.0535 of a mile, which is well within the limits of the probable error of this determination.

For the distance of the moon I found that the diameter of the earth in the latitude of Jerusalem multiplied by the cube root of four times the diameter of the circle of latitude of the Pyramid = 238,652.0 Pyramid miles. With this distance and the diameter = 2161.3285 Pyramid miles, the mean apparent semidiameter = $15' 34.0''$, which is also well within the limits of the probable error of the mean semidiameter derived from the Greenwich observations ($15' 34.1''$)

I now proceeded to seek for an expression for the sun's distance and obtained the following:

The square of the earth's equatorial diameter multiplied by the cube root of π = 91,822,500 Pyramid miles. The following confirmatory expression was also obtained:

Two hundred times the diameter of the earth in the latitude of Jerusalem multiplied by the square root of the cosine of the latitude = 91,822,500 Pyramid miles.

For the diameter of the sun we have:

One hundred times the equatorial diameter of the earth multiplied by the moon's synodical period, and divided by the sidereal period expressed in mean solar days = 855,817.6 Pyramid miles.

The diameter of the sun being 855,817.6 Pyramid miles, the connection between this diameter and that of the moon is shown as follows: The square root of the sun's diameter = 100,000 times the moon's diameter divided by the product of the moon's synodical period and the diameter of the earth in the latitude in which one minute of arc of longitude exactly equals one Pyramid mile.

With distance 91,822,500 miles, and diameter 855,817.6 miles, the sun's mean apparent semidiameter = $16' 1.23''$; the mean value obtained by Mr. Thackeray from the Greenwich observations is $16' 1.25''$.

The above value for the distance of the sun gives the parallax = $8''.898$, and after I had obtained it I referred to the list of astronomical determinations given by Mr. Latimer in his paper on "The Parallax of the Sun," on pages 37 and 38 of the "Proceedings of Ohio Auxiliary Society of the International Institute for Preserving and Perfecting Weights and Measures," and selecting twelve of the most reliable I found that the mean value was $8.897''$. I conclude, therefore, that the most probable distance of the sun is that given by the above equations.

The value of the earth's equatorial diameter which I have used in my calculations is given by the following equations in which t = the length of the tropical year, e = the earth's equatorial diameter, and E = the polar diameter :

$$1. \frac{(4 \sqrt{56 t \sqrt{2}})^2}{E} = e = 7918.0138 \text{ Pyramid miles.}$$

$$2. \frac{E}{40 \sqrt{\frac{2t}{\sqrt{\pi}} - 1}} = e = 7918.0138 \text{ Pyramid miles.}$$

The value of t necessary to make these equations strictly identical is 365.2424216 ds., but this value is not the astronomical value of the length of the year at the commonly supposed date of the building of the Pyramid, nor that at the date of the birth of Christ, but is that which it had about 1700 B. C., and therefore at the time when Joseph was ruler over Egypt, thus supporting in a remarkable and very unexpected manner the view advocated by Mr. J. W. Redfield that the Great Pyramid was built under Joseph's direction.

I have elsewhere shown that in order to account for the angles of descent and ascent of the passages, and the length of the leading measures in the Great Pyramid it is not necessary to assume that they are connected with, or dependent upon, the position of the star α Draconis at any particular time, and therefore the mean value of these angles, and the position of the two fine lines on the walls of the entrance passage cannot any longer be regarded as affording a reliable indication of the date of the building of the Pyramid.

JOSEPH BAXENDELL.

THE OBSERVATORY, BIRKDALE, SOUTHPORT, September 1, 1885.

LETTERS.

LETTER FROM H. R. SHAW.

GRAND GALLERY LENGTHS.

DEAR SIR :—In a review of three pamphlets in the *Banner* for July 1, treating pretty much upon this subject, it is observed that previous writers have determined this length mathematically and otherwise as 1,921 inches or thereabouts—in fact, nearly agreeing with the 1,922 inches, as claimed by Mr. Keith's pamphlet. Presuming myself to be intended as the writer who gave the mathematical determination at 1,921 inches (in the *Banner* for May 2 and 9, 1883), and having also my attention privately recalled to the matter by two of the most valued contributors to these pages, I hope to be permitted to recapitulate a portion of my previous article in justice alike to myself and the Great Pyramid, and possibly to benefit and assist new inquiries in this field of research.

That article, after quoting a previous observation of Piazzi Smyth, that the grand gallery had three lengths, as given by his own measures, went on to point out still two more real and practical measurements that might be maintained, as well as a sixth length, a purely theoretical one, but which harmoniously governed the other five lengths in truly quintosextuple propriety, being in itself the curiously quintosextuple number of 1,921 inches. And the further remarkable property of the six lengths is that they yield an average which is exactly equal to one of their number, the real floor length of 1,874 inches, and thereby investing that quantity of inches or years with central significance in regard to the events of the ending of the dispensation represented by this chamber, and confirming my own previous conclusions, as set forth in the "Egyptian Enigma," page 52. Thus the lengths are :

	PYRAMID INCHES.
1.—Ascending floor line alone.....	1,813.
2.—Dr. Grant's length of roof.....	1,844.5
3.—Real floor line, all of it.....	1,874.
4.—Ascending line, all through step.....	1,881.6
5.—Line over step, 43.7^2 , or $\frac{8000}{4}$	1,910.
6.—Quintosextuple theory, $25^2 + 36^2$	1,921.
	6 | 11,244.1
Average length.....	1,874.

Thus the Pyramid shows in a natural way, and without any alteration of the system of inch-chronology, the same quantity of 108 years, as is claimed by Mr. Keith for the closing in of the dispensation, but with the dates or intermediate endings altered to 1813, 1845, 1874, 1882, 1910 and 1921 A. D. What this may mean I do not attempt to unfold ; but if there be any meaning at all in the grand gallery's inches (as who can doubt) then the end was ushered in at the close of the year 1813, and must terminate finally at the close of the year 1921, having an important central epoch at the close of the year 1874, besides remarkable and perhaps decisive events in Israel's history, occurring in the spring of 1845 and 1882, and the close of 1910. This I believe to be the real enigma of the

grand gallery, and one to which students or expositors of the Great Pyramid and the prophetic Scriptures will do well to direct their attention.

I remain, dear sir,

Yours faithfully,

H. R. SHAW.

24 Ludgate Hill, E. C., July 3, 1885.

LETTER FROM R. COURTENAY.

TANNA, BOMBAY PRESIDENCY, July 20th, 1885.

Dear Sir.—I hope you will excuse my writing on this paper, but I wish to have it of the same size as the manuscript which I enclose. I shall esteem it a favor if you can find space for the article which I have put in a very compressed form. I think if you admit the force of my arguments, you will like my conclusion which comprises my view of the casing stones, viz: That they were only seals on the prophecy—a cover to be removed. I am greatly indebted to Mr. Skinner for his splendid criticism of Petrie's Measures in the November number of THE STANDARD, from which I have derived much information and valuable suggestions. The little figure is a tracing from the lower part

of Petrie's Fig. ix. You will see that a line drawn through the sharp corners of the masonry (*vide* his last par. on page 27—"most prominent points"), must fall between A' the true end of the present base, and A the end of the ancient base. He must have looked at the first fifty courses, the average height of which is 33 to 36 inches. Therefore (*vide* proof I, page 351, of this Magazine), his line would be thrown out $34 \times \frac{\pi}{4} = \frac{34 \times 11}{14} = 27$. Deducting this at each side we have for his mean value $9001.5 - 54 = 8947.5$.

I am still quite in the dark as to the position of the end of the basement sheet of the entrance passage. Over what course of masonry is it and about how many inches above that course and how many horizontally from the vertical face of that course? I have been under the impression that it was over the sixteenth course, in which case the height must be more than 600.

As Petrie (*vide* note to pp. 41-2) started 20 inches higher and struck off one course his 612 answers to 632, or 4 or 5 inches above the seventeenth course of Piazza Smyth. It ought to be easy to determine above which course of Piazza Smyth, and until this is done I can make no progress. I should be much obliged if you would help me in this matter.

I notice that the Institute have prepared a large chart of the Pyramid. I shall (D. V.) after the 1st prox. remit the equivalent of V. 10, and I shall be much obliged if you will send me a copy of the chart. If I send less than the price let me know, and if more, please put the balance to the credit of the Institute.

You ask me about Mr. O'Donel: I correspond regularly with him. He is very strong in Biblical chronology, and it was from him that I first heard of the tables of days of the Juhan Period at the end of the Greenwich Nautical almanac. He is at present working at the chronology of the queen's chamber. I hope you will encourage him to go on with his investigation. I have not found your date in 1774, A. D.; it should be either in the queen's chamber or in the part of the gallery preceding the great steps.

I was greatly pleased by all that you told me in your letter, although I cannot adopt your views in regard to Isis. I have derived mine from Heslop's "Two Babylons," a book in which such wonderful things are asserted, that I did not believe them until I had fully tested them by means of classical dictionaries, "History from the Monuments," etc.

I see from the May number that you attach particular importance to the verification of the date of Waterloo. I think you may set your mind at rest about that date. If Mr.

Searles does attack me I am much better prepared to answer him than when I wrote my pamphlet. I send you some spare copies of the postscript. Hoping soon to hear from you, I am, yours sincerely,

R. COURTENAY.

LETTER FROM THOMAS BASSNETT.

MAYNOKOTA, IOWA, Aug. 7, 1885.

Dear Sir:—I send you by same mail a small pamphlet, which, if duly weighed, may be regarded as invalidating certain conclusions of C. P. Smyth drawn from the measures of the Great Pyramid in which you take so much interest. I believe in the Pyramid and its teachings, especially, as I find so much to confirm my own long ago obtained facts in a system of ancient chronology begun over fifty years ago, and which, (D. V.,) will ere long see the light. But I do not see in the way the sun's distance is obtained any very appropriate relationship between the indications and their interpretation; and I am afraid that the great truths which the Pyramid does undoubtedly teach, may be damaged by an excess of zeal in claiming it as a witness to belittling and irrelevant facts which never entered into the minds of its builders.

Whether the sun's distance is contained in the Pyramid or not (and this certainly would not be a fact unworthy of being recorded in such a monument), I, of course, can offer no opinions, but, if it be, depend upon it it will be found near the figures given in that pamphlet. I suppose that Prof. Encke devoted more time and talent to the question of parallax than any other man, and he gave the same parallax as mine from the mean of transits of Venus of 1761 and 1769, or the mean of $8''.49$ and $8''.60$, or $8''.545$. I find from the law I have discovered $8''.55$, or more exactly $8''.542$ corresponding to a distance of 95,693,000 miles. But you will notice I reverse matters by finding the true distance of the sun first, and then, as a matter of curiosity, calculate the corresponding parallax.

Wishing your magazine the prosperity it deserves, I remain,

Yours truly,

THOMAS BASSNETT.

LETTER FROM JOSEPH BAXENDELL.

THE OBSERVATORY, BIRKDALE, SOUTHPORT, Sept. 1st, 1885.

Dear Sir:—I enclose a short paper "On the Distances and Diameters of the Sun and Moon," for insertion in the "INTERNATIONAL STANDARD" if it meets with your approval. I was much surprised when I obtained a length for the tropical year agreeing with the length it must have had in the time of Joseph. This, taken in connection with the results I had previously obtained, and the arguments ably advanced by Dr. Redfield in his interesting papers on "The Altar and Pillar to Jehovah," seems to show that the Draconis theory of the time of the building of the Great Pyramid must now be given up. Whatever may have been the primary object of the design of the Pyramid, there can now be little doubt that the figure and dimensions of the earth were intended to be indicated by the more important of the measures of angle and length.

I regret to say that my health is in a very unsatisfactory state. I have been interrupted while writing this, and as it is now near post time I must conclude, with my kind regards to you and best wishes for the success of the "INTERNATIONAL STANDARD."

Yours very sincerely,

JOSEPH BAXENDELL.

LETTERS FROM J. M. DURKEE.

BEHOLD MELCHISEDEC!

PITTSFIELD, MASS., Aug. 28, 1885.

From the earliest history of the church, (see Heb. 5, 11,) to the present hour, to the great mass of Christ's believers, and also others, Melchisedec has been a dark, wonderful, unsolved mystery! Even Dr. Adam Clark remarks:

"There is something certainly mysterious in the person and character of this king of Salem. He seems to have been a sort of universal priest, (!) having none superior to him in all that region; and confessedly superior to Abraham."

Many other commentators, are of like opinion; some moderns, even, surmise that he built the "Great Pyramid of Jeezeh in Egypt!" (Permit me here to remark: that may be true in many respects, but he had a wonderful sub-builder in the land of Egypt.)

It is not my design, by the multitude of quotations from others, or ideas of my own, to obscure this remarkable personage, but far otherwise, to "hearken to the voice of the word of God," and all who have "ears to hear," and "eyes to see" shall hear, and "behold Melchisedec."

1st. "Now consider how great this MAN [Melchisedec] was, unto whom even the patriarch Abraham gave the tenth of the spoils." Heb. 7, 4.

2d. "But this MAN, [Melchisedec] because he continueth ever, hath an unchangeable priesthood." Heb. 7, 24.

3d. "But this MAN, [Melchisedec] after HE had OFFERED ONE SACRIFICE for sin, FOREVER sat down on the right hand of God." Heb. 10, 12.

[This mysterious priest—this "man"—as he is called, "offered ONE sacrifice" even himself, upon Calvary, "For if he were on earth, he should not be a priest."]

4th. "Then said HE, Lo, I come to do thy will, O God." Heb. 10, 9.

5th. Then said I, Lo, I come (in the volume of the book it is written of me) to do thy will, O God." Heb. 10, 7.

Comments are entirely unnecessary. "Behold Melchisedec." Behold the "Chief Corner Stone" of the Pyramid of eternal redemption.

After the order," signifies plan and arrangement of God! Hence the marvelous beauty of that passage: "Lo! I come!"

Respectfully yours,

J. M. DURKEE.

LETTER FROM J. M. DURKEE.

PITTSFIELD, MASS., Aug. 21, 1885.

My Very Dear Sir:—I was not quite satisfied with the last letter which I wrote to you, especially that part wherein I make mention of "ascending angels" and "mysteries." I wish now to enlarge upon this thought, in as concise manner as possible, and when all the members of our Society shall behold and understand the true teachings of things invisible by things visible, then will His "Pillar" which is in Egypt appear unto us as a "pillar of fire" of Revelation, and the "ascending and descending angels" as the earthly ambassadors of that revelation.

There is no possibility of misconception in this matter, for the light of God's enunciation causes all things to flame with the presence of God as the "burning bush." I do not say one thing, but all things, and I present the following word of God as my support:

"For the INVISIBLE THINGS of Him FROM the creation of the world are CLEARLY SEEN, being understood by the THINGS THAT ARE MADE, even His eternal power and Godhead."

"Hast thou not heard LONG AGO, HOW I HAVE DONE IT?"

I will not mystify by words, but rather look "steadfastly" upon the revelation of he

invisible by the visible : yes, I will look upon His "Pillar" of "signs," and may I say, the great "treasury" of "types" of God's creation !

But another assumed mystery—"Melchisedec"—(who, some conjecture, built the Pyramid). But let us ascertain who He was, by the "visible" priest, the—"type !"

"This MAN (mark the wonderful revelation !) BECAUSE HE CONTINUETH EVER, hath an UNCHANGEABLE Priesthood," "made higher than the heavens."

"Who is made, not after THE LAW of a carnal commandment, but after the POWER OF AN ENDLESS LIFE !"

"It is therefore NECESSARY that the PATTERNS of THINGS in the heavens should be purified with these ; but the HEAVENLY THINGS themselves with BETTER SACRIFICES," "For Christ is not entered into the holy place made with hands."

Thus we behold Melchisedec Jesus—the Priest of God !

Also further, my design is, to show that the mysterious "line of Shepherd Kings" existed only in the genealogies which God "has called from the beginning," and made us "to know" the Shepherd King Invisible, by the shepherd king visible, and the FIGURE of Him who, "in the fulness of the dispensations of times," shall "gather all things in Christ."

Forever, then, fade all mysteries by the light of eternal revelation. The "Spirit takes of the things of God, and shows them unto us."

Forever vanish shepherd kings who have no genealogies, no pastures, no wells, no springs within the valleys or upon the mountains of God !

O, Infinite ! Heavenly Father ! in the manifestation of Thy Glory, make manifest unto Thy dear children, who seek to know, and to glorify Thee upon the earth, Thy manifestations in "visible things."

Thus I feel assured that we "shall know of the doctrine," and also understand the teaching of His word by figures, symbols, allegories and parables.

Respectfully yours,

JAMES M. DURKEE.

LETTER FROM R. COURTENAY.

TANNA, BOMBAY PRESIDENCY, August 3, 1885.

Dear Sir:—Just a line to tell you that I have remitted to you through the post office £1. Will you kindly let me know whether you have received safely an article on "The Core Masonry and the Great Week of Prophecy," dispatched on 20th ult? If the article should be discussed at one of your fortnightly meetings, I would be glad if you would sum up as follows : My theory will be opposed on two grounds—1st, because my value of the base side is too small ; and (2d) because my value of the height is too large. Unless the objection can show that the angle of rise of the present masonry (minus sharp corners of courses) is not the π angle of the ancient structure, these objections are mutually destructive, so they cannot be maintained together.

(2d.) The angular observations of Ayerton and Professor Piazzzi Smyth prove that the π angle is the angle $51^{\circ} 51' 14.3''$.

(3d.) If we subtract the platform side (making due allowance for corners) from the values of the base, and from the difference calculate height of platform by means of π angle, it will be found to correspond so closely with the best measures of the height of the platform as to leave no doubt in any unprejudiced mind that this is the true angle.

(4th.) As the present base side must be equal to the ancient base minus the casing stones, 8952 must be too large, for this would leave only 188 for the two casing-stones, and no such stone has been found with any base less than from 98 to 100.—

O'Donel sent me a number of the *Plain Dealer* with a short notice of an attack on my pamphlet by Mr. Searles. As I suppose it will appear in the July number of the STAND-

ARD, I shall reserve my answer till I see that number. I found after I had printed my pamphlet that I might have taken up a much stronger position than I did in proving that the height of the step was 840 inches.

Yours sincerely,

R. COURTENAY.

LETTER FROM J. H. DOW.

CLEVELAND.

Dear Sir: If Mr. James Simpson's proposition (published in Jan. number of INTERNATIONAL STANDARD) is correct, that the sum of the square roots of length, breadth and height of king's chamber, in Pyramid inches, is fifty *exactly*, then, by admitted geometrical relations of king's chamber dimensions to base of Pyramid, the length of one side of base will be 9133.+, instead of 9131.+. (By formula $\frac{62500 \sqrt{\pi}}{(1+\sqrt{2}+\sqrt{\pi-2})^2} = 9133.+$)

Will Mr. Simpson please examine this test?

Yours truly,

J. H. Dow.

LETTER FROM JACOB M. CLARK.

119 LIBERTY STREET, NEW YORK.

Dear Mr. Dow: You have struck one of the grandest thoughts that has arisen in the whole investigation. You are pleased to speak of my announcement of the proposition as to gravimetric correlations in better terms, perhaps, than it really deserves. Maintaining, nevertheless, my own idea, that whatever correlated measures we may find about the Great Pyramid may be "pointers" to the ultimate scientific unit, may it not be the fact, that while it has pleased God to preserve the key of the measures among the Anglo-Saxon people, it was only a key after all?

I would like to have you suggest to Rev. Mr. Wood, and to Latimer, a point which I forgot to mention in my letter to Latimer yesterday, that Mr. Wood's differential 25 inches of the pendulum in British inches at the Pyramid, applies with mathematical exactness in Pyramid inches at latitude 45°. Now, conceding that the progenitors of the Anglo-Saxon people were represented at the building of the Pyramid, were not others also, under the correlation I have indicated? Sufficient honor, then, to the Anglo-Saxons that having preserved their ancient measures, though marred by vicious legislation, as Colonel Chester so happily puts it, they are singled out of God to be the instruments, in His providence, of pointing out the metron which was in the mind of the architect. If we take a different view, my dear Mr. Dow, the Egyptian, the Arabian, the Persian, the Hindoo, and countless others whose measures can be disclosed in the Pyramid, by application of ratio, can also, by the simple argument of analogy, claim to be the chosen people of God. God forbid. "To the Jew first, and afterward to the Gentile." Why did Ezekiel say, and repeat, "according to these measures," and "the cubit is a cubit and a hand breadth," and "the reed is a full reed of six great cubits," except on this one idea, that ultimately the ruling metron of the world (not solely of the visible temple) was to be the one metron of science? Really, is it possible, under any other theory, to unite the whole world upon one system, or rather on a simple and easily understood correlation of metrics? And when the millenium comes, Dow, will it not be the case, that the metron will be the simplest, most universal and most logical metron to be found? Where is any one that, in all its applications, can compare with the sacred cubit?

In regard to revelation, I wrote to Smyth (in effect) that the modes of revelation are as countless as the facts of the cosmos, and various as the channels of human thought;

that the world teems with men, whether of Paul, or of Cephas, or of Christ, or of neither, who see the heavens aflame with divine glory, and the firmament an illuminated scroll of His handiwork; to such men the humblest blade of grass is a literal burning bush, before which science stands veiled and barefoot. [And the old idea pictured to us in our childhood, of Moses kneeling on Horeb, and receiving a pair of flagstones out of an irradiate, thunder cloud—as a conception of the nature of revelation—must be buried with the rest of the dolls (i—dols) of childhood]. Plazzi Smyth says, in effect, amen. We are simply on our knees asking for the truth.

Truly yours,

JACOB M. CLARK.

P. S.—I wish, Mr. Dow, you would write to Rev. Edward Hine, pointing out the fact of the preservation of the fundamentals of the Anglo-Saxon weights and measures to be one important link in the identity of the race with the Pyramid builders, and with the ancient people of the covenant, no matter whether we treat of exact ultimate dimensions, or of the most significant and convergent key to be found (except possibly among the Arabians).

[Compare the masons, direct or itinerary, of the various portions of the now British people, of the Gauls, the older French, the Lithuanians, the Silesians, etc., etc., as found in the "Metric Analogues," published in the INTERNATIONAL STANDARD.]

There is but one logical and pure symbol for God—Christ—the New Jerusalem—and all that; it is the circummetric ratio, or π . The equilateral triangle and the cross are emblems of it—implements of its disclosure—and yet they are not it. He alone, though finite as to any assignable predicate, is infinite in its expression. But it has only one mode of logical subdivision. The Babylonian method—a most captivating monument of human ingenuity—is artificial and therefore wrong. Its unnecessary and entangling factor, $\frac{1}{6 \times 60\pi}$, is the clay with the iron, just where "the stone cut out of the mountain without hands" is going to strike. I verily believe that the Messianic symbol set up by Moses in the wilderness was the serpent-circle upon the cross. And the true original tables of stone are not destroyed; they are the two-fold indestructible tablets of the human mind. Does not St. John declare that Immanuel is God in the human mind?

J. M. C.

EXTRACT OF LETTER FROM THEODORE GRIBI.

And now I want to say that I have enjoyed reading the last Magazine very much, which I did while at Stevens' Point. I have also read a portion of Dr. Mahan's Palmoni, and I must say that the subject of the wonderful numberer is an extraordinary feature. I have not had time to bestow on it study as the subject merits; I have only rapidly glanced through Mahan and the article in the Magazine on the Grand Seal of the United States, but have seen sufficient to say that it is a wonderful, extraordinary feature of inspired writing, one into which I shall look further. It is impossible that the coincidences of numbers should be accidental, and it is equally impossible that they should be so by a conspiracy among and on the part of the writers of the various portions of the Bible. If this system of numbering holds throughout the Bible—and it seems to do so—it is a proof, such as no ridicule or skepticism can set aside, of the unconscious inspiration of the volume, *i. e.* that an intelligence which the writers were not conscious of guided their thoughts and chose their words. One scarcely knows what to say or think about it. It is a mystery, and yet it carries conviction with it. I wish I could obtain a copy of that work. Would it not pay to have a reprint of it? I shall look among the antiquarians of New York and Philadelphia for a copy.

Very truly yours,

THEO. GRIBI.

LETTER FROM JACOB M. CLARK.

Dear Sir.—I notice that under the geometric division of the circle we have, practically, the sun's parallax in *hour arcs* $= 4 + \frac{\pi}{4}$ which agrees very closely with your calculation of the amount in the STANDARD of March, 1883, with the difference only that the "radian," or analytical unit is $\frac{180}{\pi}$, instead of $\frac{180}{\pi}$, and the arithmetic is decimal.

The sun's mean diameter in geometric miles being $\frac{21000}{\pi} = 7639.44 \pm$, the moon's distance is $= \frac{(4 + \frac{\pi}{4}) \times 10^8}{2 \times 3^3 = 54} = 88,618.482 \pm$ geometric miles $= 10^8 \times$ the sun's parallax in Babylonian seconds of arc, very nearly. The latter result from a simple arithmetical law.

The *measure* of the parallax, $4 + \frac{\pi}{4}$ is, of course, the perimeter of a square + length of quadrant of inscribed circle, diameter being 1. π appears under *positive* exponent 1.

54 is a prophetic number, and may not the *modulus* be 108 instead of 107.87+, as we do not know the moon's parallax or distance *exactly*?

The relations of diameters, parallaxes, mean distances and periodic times of the sun, moon and crescent, by this notation, look Pyramidal and simple.

Truly yours,

JACOB M. CLARK.

LETTER FROM C. A. L. TOTTEN.

WASHINGTON, D. C., August 18.

M. S. HINMAN, Court of Common Pleas, Cleveland, Ohio.

Dear Sir: Yours at hand, forwarded me here. In reply I would state that the thirteens cover the seal in every direction. For instance:

- | | | |
|----------------------------------|---|----------------------------|
| Reverse as mentioned in the law. | { | 1. Annuit Coeptis. |
| | | 2. Eye. |
| | | 3. Triangle. |
| | | 4. Glory. |
| | | 5. Pyramid unfinished. |
| | | 6. Date, 1776. |
| | | 7. Novus ordo seclorum. |
| Obverse as mentioned in law. | { | 1. Crest. |
| | | 2. Motto, E Pluribus Unum. |
| | | 3. Eagle. |
| | | 4. Shield. |
| | | 5. Olive branch. |
| | | 6. Bundle of arrows. |

Besides all this there are numerous subordinate groups of thirteen, not as in the seal usually represented, but in its correct form. It has never yet been so cut as to do the grandeur of the idea justice. My history of the seal (if ever issued) will fully explain. My present idea is shown in the designs and in my book ('An Important Question'). The cuts are reproduced in the last Magazine. The topic is inexhaustible, so one might as well stop here as anywhere in a mere letter. I trust some day to be in Cleveland; if so, shall be happy to see you and explain more fully.

Yours sincerely,

C. A. L. TOTTEN.

LETTER FROM C. PIAZZI SMYTH.

15 ROYAL TERRACE, EDINBURGH, August 15.

Dear Sir: No sooner are my wife and self returned from our health-seeking tour, than an important package of INTERNATIONAL STANDARD literature has arrived from your-

self, together with your letter of July 31. This I have read, also the *Plain Dealer's* account, on July 30, of your last previous meeting of the Institute—a very full one, too, and yet a better one still is indicated for the next meeting. But my wife has already dipped ahead of me into the *STANDARD*, and besides being greatly struck with the excellence of Mr. Courtenay's grand letter, she sees such a communication from Rev. Mr. Wood, Sharon, Pennsylvania, that as to a lady's complaint "that you have nothing new in the journal now," she wonders whether the complainer had understood Mr. Wood's paper, and some of the others also.

I am certainly sorry that Mr. Searles has so severely criticised Mr. Courtenay, before he can have fully heard him. I certainly have a whole sheaf of letters from Mr. C. here, each one of which shows him to be a born mathematician, of immense energy and work, spite of Indian climate, high temperature and humidity to excessive saturation—a Christian of the finest type of New Testament faith, and then he is progressing continually. New horizons, conformable to Bible and Pyramid, are opening before him in so vast a scale that he cannot be expected to have the whole at his fingers' ends at once. Nor again, if they were still more perfect, would they necessarily agree with all Mr. Searles', or yours, or my ideas; but I am quite content to see an able man working up towards the light, for it will all come out right at last, when our Saviour, Lord Jesus Christ, appears again.

I have just been told of a book by a clergyman, who readily denounces the Great Pyramid as of the devil and no mistake. His method of proof is, "take its date, 2170. Subtract 1 from that number; then you have 2169. Add these numbers together horizontally and you have 18; then split the 18 into 6, 6, 6, and then you have it unveiled." That is the sort of book Mr. Searles should get hold of and show up the author thereof and convict him of his utter ignorance of 999 parts of the Great Pyramid's 1,000, and show up his tampering with the remaining 1.

Yours truly,

C. PIAZZI SMYTH.

P. S.—Janssen's letter is covertly pro-French metric; and unhappily some Londoners are in the same cause throwing similar dust into their own countrymen's eyes. Why not have the great dead General Grant for your next portrait. Englishmen may well work for such a one.

C. P. S.

EXTRACT OF LETTER FROM J. H. WELDON.

ASH HILL TOWERS, KILMALLOCK, August 29, 1885.

Dear Sir:—In the accompanying I have combined a reply to your letter with a few more observations on the United States Seal, which I hope will help to lead us all on to a better understanding of both sides. The report of one of your meetings does not state on what ground Judge McMath counts the arrows as six—not thirteen—for the generally received description says thirteen. I thought I gave full recognition to the fact of the thirteen, referring in the first instance to the number of the states, as the correspondence of number cannot be denied. But I think that should not debar me from looking for another 13, seeing that the 13 states or colonies could not be the *pluribus* of the motto, as I think I have very clearly proved. It seemed to me a very extraordinary idea to designate the seal "a remnant of barbarism," and "not a sign of civilization." When considering the mention of the seal by the prophet Jeremiah, and, as you instanced, in the case of Ahasuerus, I have always been led rather to wonder at the high state of civilization that led the people to the possession of such things in those early times.

Again thanking you, and hoping that some "accomplished 81" will come forward and tell us something more, I am,

Yours sincerely,

J. H. WELDON.

LETTER FROM J. H. WELDON.

ASH HILL TOWERS, KILMALLOCK, IRELAND, August, 1885.

Dear Sir: I am much obliged for the copies of your Magazine received, and for the trouble you have taken in illustrating the subject of my paper. There are a few errors which it is difficult to avoid, especially in the Hebrew, where some of the letters so strongly resemble others, but the figures are all correct.

In reply to your question, I wrote the article long before I saw your pamphlets and Dr. Wild's, but on obtaining the latter I extracted some information from it regarding the origin of the seal. I took my ideas from a study of the wood-cut that appeared in 'Our Rest' of January, 1882, in which the stars are represented in the form of a square with one star in the centre; these are surrounded by rays of light encircled by a cloud. It is precisely the same as appears on page 52 of your 'Battle of the Standards.' This design appears to be more in accordance with the heraldic description which I now copy from page 12 of your little book: "Over the head of the eagle, which appears above the escutcheon, a glory, *or*, breaking through a cloud proper, and surrounding thirteen stars, forming a constellation, *argent*, on an azure field." A full consideration of the above description of the crest makes the idea of the camp formation the more correct; for we have the brightness of the glory on the *inside* of the cloud, throwing light upon the camp, and illustrating, with unmistakable exactness, some of the most remarkable facts connected with the encampment and journeying of the Israelites through the wilderness. The change in this portion of the illustration at the head of my paper makes the subsequent remarks, on the quadrilateral arrangement of the stars, unintelligible; but what I have now written will explain.

Lieutenant Totten's design, on page 268, is, I must allow, very beautiful to look at, but I cannot approve of it, seeing that it is not in accordance with the heraldic description above quoted; nor do I like the notion of appearing to accommodate the seal to an idea, or, by any change of design, such as showing the rays of light on the *outside* of the cloud, or by making the Pyramid to consist of thirteen courses, thus altering what was actually laid down at the first, when, as you have so aptly expressed it, "men wrought wiser than they knew." Similar remarks apply to the design of the centennial medal.

Allow me, now, to add a few more coincidences of texts and numbers in further support of cabalistic interpretation, and to show the frequent occurrence of the number 153. Referring to the glory surrounding the all-seeing eye, we read in Ex. xvi., 7, addressed to the Israelites, "Ye shall see the glory of the Lord." The Hebrew words meaning "the glory of the Lord" make 459, or three times 153. In Matt. v., 14, our Lord says, "Ye are the light of the world," *humeis este to phos ton kosmon*, which is equal to $655 + 510 + 370 + 1500 + 770 + 800 = 4605 = 5 \times 1535$. Take the whole of the ninth verse of the first chapter of Hosea: "Then, said God, call his name Lo-ammi, for ye are not my people and I will not be your God." In this verse, consisting of thirteen Hebrew words, their values respectively are $257 + 301 + 346 + 31 + 120 + 30 + 1001 + 31 + 120 + 87 + 31 + 21 + 650 = 3026$, which divided by 2 gives 1513.

The following I take from the foot of page 18 of your book on the seal, which gives the ninth of September, 1776, as the day on which the union was declared to be the United States of America. Now, if we count up the days from the first of January in that year, we shall find the ninth of September to be the 253d day. It is indeed remarkable how frequently this 53 is noticeable. In the term applied to Israel, "The strong people," *ko laos ha pharaz*, is equal to $70 + 301 + 70 + 2050 = 47$ times 53; whilst *pharaz* taken alone is equal to 7 times 53. "The dispersed among the Greeks," *ha diaspora ton Hellanon*, shows $8 + 466 + 1150 + 973 = 2597$, or 49 times 53. Jezreel is value for 318, or 53 multiplied by 7 and 8; and if we take from Hos. i., 11, the Hebrew of the words, "for great shall be the day of Jezreel," we find their sum to be 1007, or 19 times 53. Let us now turn again to the thirty-fourth chapter of Numbers and take from the Douay, or Latin ver-

sion, the names of the tribes, putting down the value of the Roman numerals contained in each name, and treating them as we did our extract from the Greek, at page 216 of your July number, and we see that the sum of the several figures comprising those numbers is exactly 53.

Ruben	V	5	5
Gad	D	500	5
Manasse	M	1000	1
Juda	DVI	506	11
Simeon	MI	1001	2
Benjamin	MII	1002	3
Dan	D	500	5
Joseph	I	1	1
Ephraim	MI	1001	2
Zebulon	LV	55	10
Issachar	CI	101	2
Aser			
Nephthali	LI	51	6
		5723	52

And if we take the total of the whole, which is 5723, we find the sum of these figures to be 17, the number expressive of God's people. In further agreement with this observation of St. Augustine, to which you have referred, we have in Is. li. 2.

The redeemed of the Lord producing 136, which is equivalent to 8 times 17. And here it is worthy of remark, that the sum of the first 17 numbers is equal to 153; and 17 multiplied by 9, or the square of 3, also produces 153.

I was very much interested in your book, especially your reference to the 12 and 13 letters in *annuit capitis*, which I think very significant; and to the 17 letters in the other motto, both of which had escaped my observation. I refrained from noticing them in my former paper, preferring that it should appear in its original state. But now, when considering this 12 and 13, I fancy I see the same idea reflected in the quadrangular formation of the stars already referred to, and I fancy also that the star arrangement, as primarily representing the 13 states which in 1776 formed the nucleus of this now great Nation, is that particular portion of the entire design to which the motto, *annuit capitis*, most especially refers.

I observe that this cabalistic system is applicable to words and sentences in Hebrew, Greek and Latin—the three languages in which the superscription on the cross was written. But the English language is a compound of all three. May we not, therefore, try whether the system may be applicable to it also? Let us, as we are on the subject, take the words, "THE UNITED STATES." Here the value of the Roman numerals is 506, which is twice 253; and for Great Britain write down "THE UNITED KINGDOM." 506 + 1501 = 2007, which does not bring out the expected number. But if we add its value to that of "the United States"—in other words, if we write Ephraim and Manasseh—the result is

506

2007

2513

and the three figures are produced.

Take now "GREAT BRITAIN AND IRELAND,"

add	2	500	551
	2		
	500		
	551		
	1053		

and see again the inevitable figures contained in the result. Once more let us try it on the fuller and more comprehensive name,

"THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND."

506 1501 2 500 551

506

1501

2

500

551

Divided by 2013060 and we have the real number,

153

And as we are on the subject of Great Britain, I shall conclude by repeating the two following numerical coincidences which I have before now remarked regarding the union of Ireland with that country. If we add together the values of

ENGLAND = 550

SCOTLAND = 650

WALES = 50

1250

IRELAND = 551

we see in the total 1801 the year in which on the 1st of January the union took place, the imperial standard having been formally hoisted on Dublin Castle on that day. And the numerals in the words ENGLAND VNITED WITH SCOTLAND point to the year 1707 as that in which the union of those two countries took place.

Here I shall conclude, requesting my readers to observe that these examples are not put forward as proofs or evidences of the Anglo-Israel theory. They are given merely as coincidences or facts which will go far to show that there is, perhaps, more in the cabbala than persons who have not given the subject their attention would be inclined to believe. I am, dear sir,

Yours faithfully,

Ash Hill Towers, Kilmallock, Ireland,

J. H. WELDON.

August, 1885.

EXTRACT OF LETTER FROM CHARLES FERGUSON GARLAND.

PUBLIC SCHOOLS, NELSON'S PLAINS, NEW SOUTH WALES, AUSTRALIA,

August 8, 1885.

Dear Sir:—I must now tell you how I came to know anything about the excellent institution of which you are the honored president. It was on this wise. Some three or four years ago I espoused the cause of the Anglo-Israelite theory, on conviction, and bought several books bearing on the theory; among others, those on the Great Pyramid by Professor C. Piazzi Smyth, Dr. Seiss and Mr. Charles Casey. All of these I perused carefully, and was surprised and gratified to find how our weights and measures were verified by the Great Pyramid, as against the atheistical methods of reckoning used by continental nations, more especially that of France, which has some advocates both in the United States and Great Britain who would thrust the "metric system" upon the people whether they liked it or not. But God will vindicate his cause. Your excellent institute was brought under my notice by perusing a pamphlet, of which you are the author, on the subject of weights and measures, called the "Battle of the Standards," which I perused carefully, with much pleasure and profit—pleasure, at finding that amidst the gloom there are some who are working for the maintenance of our present system of God-given weights and measures; profit, because of the increase of information which a perusal of books on this subject gives of things going on around us.

I find a pleasure in teaching our present system of weights and measures, having the belief that they are God-given. This is, I believe, one of the many marks by which God identifies the Anglo-Saxon race, as being his chosen vessel to work out his will.

I remain, yours faithfully,

CHARLES FERGUSON GARLAND.

LETTER FROM REBECCA N. HAZARD.

KIRKWOOD, August 12, 1885.

Dear Sir:—Your letter of the 4th inst. was received, in which you ask for my opinion of the last chapter of the "Unveiling of Isis." I was much interested in it, as I have been in all the other chapters. Being especially interested in this phase of your work, it has given me pleasure to note with what persistent effort you have unfolded truth after truth, making a chain of evidence strong enough to convince the most skeptical. I notice you think of publishing your studies on this subject in book form, and if you do I wish to subscribe for a copy. I have not seen the book you speak of, *viz*; the "Mysteries of Isis," but would much like to see it, as everything on that subject interests me. By the way, did you notice that Bartholdi's Statue of Liberty arrived in New York harbor on the anniversary of the battle of Bunker Hill, and that it was formally received on *Friday, the 19th of June*. The 19th of June, 1770, is, I believe, the day on which—Swedenborg says—the angels in the spiritual world received their commission to establish the kingdom of God upon earth, which kingdom you and I believe to have been the United States. You probably observed also that the Liberty Bell started on its mission of peace to the South on *Friday*. These may be coincidences, but they are pleasing ones. I was much interested in Mr. Weldon's article on the United States Seal. He gives some striking facts in regard to its symbolism. I have long been anxious to see Lieut. Totten's book on that subject. Now, in regard to the lotus flower, I think your suggestion a good one, but we should have to call it simply the "water lily," for it is surprising to note the amount of prejudice that is felt toward everything Egyptian. I could but think of this when I saw a letter from a correspondent in your Magazine in which the *Crux Ansata* is mentioned as an "obscene symbol." This almost irritated me, for I knew it was to those early people a most sacred and holy emblem. As regards the lotus, it was probably chosen as an emblem of life on account of its great fertility and self-propagating qualities, and this it has in common with all the water lily family. The *Nymphaea Lotea* differs but little from the *Nelumbians* and some other species. You say the former is found at Monroe, Michigan. I have heard it is found at one place in the South, I think in Alabama. Have you ever thought that the celebrated Pythagorean injunction, "eat no beans," probably related to the lotus, and was a command not to profane that which was holy? But this subject swells beyond the limits of a letter. Wishing you all success in your work, I am,

Very truly and cordially yours,

REBECCA N. HAZARD.

EXTRACT OF LETTER FROM COLONEL A. T. FRASER.

TRICHINOPOLY, July 25.

Dear Sir: I am of opinion, somehow, that there is a fallacious calm in Egypt just now, and that when the river rises the tribes will either try to divert it or pour down into Lower Egypt in immense numbers, and that there will be a movement of Russia, but not on this country, as any expectation there was of revolution among the natives was defeated.

as they will not have the Russians and their rule at any price, and we have an almost impregnable frontier at the Indus, which an army cannot wade across. The Afghans decided they could defend themselves, and as the country will not support a number of Europeans, it is closed to everybody, unless they want to waste their national resources, and in this way there has been no loss of even prestige. In the event of the expedition undertaking additional researches at the Great Pyramid, it is very desirable that some one sketch out what has to be done, and the order of working, and important to distinguish what remains to be explored, from the accessible places already exhaustively measured by Mr. Flinders Petrie most recently. The chart shows what a large proportion of the bulk is mapped out to be solid, when the probability is that there are other chambers.

Dr. Grant, at Cairo, showed me a very large roll of measured plans of the galleries, containing a number of joints that had not been published, as far as I know, and he said the Great Pyramid was full of marks of which no one could make out the meaning. They must have been mostly his own and Mr. Waynman Dixon's plans. When I was there, in 1881, I lived at Shepherd's hotel, in Cairo, and rode a donkey out, carrying my lunch and remaining till evening. Mr. Flinders Petrie was in a tomb on the spot, and had provisions sent out from Cairo. I would never think of living at Shepherd's if I were doing work at the Great Pyramid. The road is bad for driving, and long, and there is so much noise and interruption at the hotel, though it was comfortable enough. The tombs would not accommodate a number, and there is no other shelter. The only way would be to use tents as we do in India, double roofed, with an air space between to keep out the sun. One large, double poled tent would do for several persons to dine and work in, and they would each require a small ten foot tent as a bedroom, and merely the commonest and coarsest articles of camp furniture, because any beyond this would invite theft, and the less luxury the more work. A collection of books of reference would be very desirable. The grub in Egypt is only middling, but there is no difficulty, or used not to be, in getting what is wanted from Cairo, so that beyond the tents and the equipment there need be very little cost for mere living when once there. House accommodation is probably dear and scarce in Cairo. English measures and weights, that is, multiples of the foot and pound, are in established use all over India. The yard is very common, being twice the cubit from the tips of the fingers to the elbow, which is the way they sell cloth among themselves. They will never take to the French metric system. I remain,

Yours sincerely,

A. T. FRASER.

THE EMPTY COFFER.

[The following poem comes at the moment of closing the Magazine. It is an inspiration.]—ED.

Speak, silent stone! I stand before thee awed,
Longing to read the secrets thou hast held
Ages on ages, since an unknown hand
Closed the dark chamber of thy solemn state,
And sealed the door, and set to watch thee there
That dread Oblivion, whose potent spell
Casts blindness o'er the eyes of passers-by
Until "the fulness of the time" do come.
Speak, silent stone! if yet the hour draws nigh
When thy grim mystery must be unlocked,
And the far past flash on our gaze, illumed—
At whose command, or by what master touch,
With more than human skill and power imbued,
Wast thou, in nice proportion marvelous,
And glossy fair, from the rough mass evolved?
Why all this seeming waste of workmanship?
Were gold and precious jewels buried here?
Was this the tomb of Egypt's greatest king,
And thou the casket? Or, more honored still,
Guard'st thou, indeed, the bones of Israel's son,
Himself, perchance, th' inspired architect?
O, listen! while I question yet again,
And lowly bow, to seek His will divine,
By whom were all things made in heaven and earth.
Has God, the Infinite, a message here,
In thee close folded through the centuries,
Ready to be revealed in these last times?
Ah, then! no vandal hordes, on spoil intent,
Bursting thy sacred walls with impious hand,
Could wrest from thee the lesson, premature;
Nor yet can unbelief retard the day
Of its revelation. Then be ours the task
Patient to listen for the voice divine.
Speak, silent stone! I wait the auspicious dawn.

—LUCY E. DOW.

TRANSACTIONS OF THE OHIO AUXILIARY SOCIETY OF THE INTERNATIONAL INSTITUTE.

JULY 15, 1885.

J. M. Case of Chicago, Ill.; Charles E. Fogg of Poughkeepsie, N. Y., and Thomas Young, England, were elected members.

With regard to the discussion on the United States seal Lieutenant Totten wrote: "The law without a breach recognizes the seal just as it was by the original law of 1782. The arrows are thirteen and not six. Webster had a die made with six, but it was a pure assumption of authority. It is now corrected in the new dies to thirteen. It is true there was no seal before 1782, but on June 30th of that year the last of several committees that had worked continuously from July 4, 1776, completed their labors and the present one was recognized and formally adopted."

It was asserted by Judge McMath at the last meeting that the United States of America had, strictly speaking, no seal; that the seal was adopted before the adoption of the constitution, and that, therefore, at the time of the adoption of the seal there was no government of the United States. Mr. Latimer said that if we had no seal we had no flag. The flag was adopted on the 17th of June, 1777, but he claimed that the government began long before the adoption of the seal or the flag, on the 4th of July, 1776, if not on the 7th of September, 1774, the date of the first prayer in congress.

After some discussion upon this subject, the president read a paper from Mr. Theodore Gribi of Elgin, Ill., entitled, "Is the Great Pyramid of Antediluvian Origin?" This is a review of a work, "Finis Pyramidis," written by Rev. Thomas Gabb, a Roman Catholic priest, and printed in London in 1805.

The president acknowledged the receipt of papers for "THE INTERNATIONAL STANDARD," from Mr. J. K. Hornish and Mr. Jacob M. Clark, after which the society adjourned for two weeks.

JULY 29TH.

Henry J. Marten, C. E., Wolverhampton, England, and Joseph Wild, Bay Ridge, L. I., were elected members. After the business of the evening had been disposed of, the following resolution touching the death of General Grant was presented by Messrs. R. D. Noble, A. M. Searles and James Lawrence, and unanimously adopted:

"WHEREAS, Since the last meeting of this Institute, mankind has been called to mourn the loss of the honored statesman and distinguished chieftain, Ulysses Simpson Grant; therefore

"Resolved by the International Institute for the Preservation of Weights and Measures, the principles of which were approved by him, That in the death of General Grant the civilized world, bowing in humble submission to the decree of Divine Providence, recognizes the departure of one who was a Christian gentleman, who was wise and just in statesmanship, and whose unsurpassed military genius, by which he became the great conqueror of the age, was only equaled by the humanity and magnanimity that characterized him in the crowning of his military career."

A paper delivered before the Society of Civil Engineers in London, England, entitled, "A Comparison of British and Metric Measures," was read by Mr. Latimer. The writer, Mr. Arthur Hamilton Smythe, favors the metric system. Some of the arguments presented by the engineers on both sides of the question were also read.

Pamphlets sent by Mr. Charles de Medici of New York, entitled, "The Medician

Theorem," were distributed to members, and his paper upon "The Sacred Cubit" was read by Mr. Latimer.

The papers of Mr. Hornish and Mr. Jacob M. Clark were held over for another meeting. The president acknowledged the receipt of a pamphlet from Mr. Sanford Fleming on universal or cosmic time.

SEPTEMBER 9th, 1885.

The following persons were elected to membership: William S. Richter, Rev. David Fraser, Rev. James P. Wilson, Rev. J. Clement French, Rev. Ray Palmer, D. D., and Rev. J. F. Stearns, D. D., of Newark, N. J.; Charles H. Miller, Galion, O.; Aurelia Burrage, Gardener, Mass.; Rev. D. H. Mueller, D. D., and George Deming, Cleveland; D. L. King, Akron, O.; James Stewart, St. Andrews, Manitoba; Vincent E. Gregg, C. E., Cleveland.

Letters were read from Professor Piazzi Smith, astronomer royal, Edinburgh; J. H. Weldon, Kilmallock, Ireland; Col. A. T. Fraser, Trichinopoly, India, and R. Courtenay, Tanna, India.

A very interesting paper from Mr. Courtenay was also read and discussed on "The Core Masonry of the Great Pyramid."

RECEIPTS FROM SUBSCRIBERS TO "THE INTERNATIONAL STANDARD" FROM JULY 19 TO SEPTEMBER 23.

July.—Bureau of Education, \$2.00; Thomas Young, \$4.87; Henry J. Marten, \$1.99; C. T. Heisel, \$2.00; J. W. Willard, \$2.00; R. D. Noble, \$2.00. Total, \$14.86.

August.—Justin Holland, for three copies, 90 cents; Aurelia Burrage, \$2.00; Mrs. D. White, \$2.00; J. H. Weldon, \$2.00; S. G. Arnold, \$2.00; M. S. Hinman, \$2.00; Fred C. Weir, \$2.00; A. W. Jones, \$2.00; George M. Cox, \$2.00; R. B. Murray, \$2.00.

September.—Mrs. Thomas Bassett, \$2.00; John Heard, \$2.00; R. Courtenay, \$4.81; Edward G. Tyrrell, \$2.00; S. H. Reeve, \$2.00; J. W. Kelly, \$2.00; Miss H. F. James, \$2.00; A. W. Jones, \$2.00; Mrs. J. Minturn, \$2.00; D. L. King, \$2.00; O. W. Kyle, \$4.00; Charles F. Garland, \$9.62.

EDITORIAL NOTES.

TO THE MEMBERS OF THE INTERNATIONAL INSTITUTE:

Dear Friends :—We propose to hold our annual meeting this year in New York, as we have there a branch society and a large number of members. Unless circumstances occur to prevent it, the meeting will be held according to our usual custom on the 8th day of November. Notice of place of meeting will be given hereafter.

The reports of the committee on weights and measures should all be prepared in time for discussion on that occasion.

We beg that members who propose to furnish papers will notify us as soon as possible, and give us the heads of their subject. We hope that all who can possibly attend will do so. We want to have a gathering of all the Pyramid students of this country and some from abroad.

TO THE MEMBERS OF THE INTERNATIONAL INSTITUTE:

Dear Friends :—We are compelled to come before you with an appeal for aid. We regret to state that our Magazine does not pay its expenses. We have six hundred and fifteen members, but they are not all paying members. It would require four dollars per member to sustain the Magazine.

In most societies the members are liable to assessment. Ours are not. And so far the burden of meeting all deficiencies has been borne by one. This has been done cheerfully, without hope of reward or return. Two thousand members or subscribers would sustain the Magazine liberally and enable us to advance its character in every way; or, if two hundred would guarantee ten dollars per annum each, we could establish the publication on a strong basis. If those who have not means to contribute would each send us the name of an additional

subscriber it would materially assist us; and we would ask those who have abundant means to subscribe for one or more of their friends and have the Magazine sent them. Those who are imbued with the truths that we are advocating feel that it is important to the cause that our Magazine should be sustained. Many literary men have assured us that it is second to none in the amount of original and instructive matter that it publishes. Upon every side we are assured that it should make a brilliant success from its own inherent merit.

Many responded liberally to our appeal for aid last year and others have since contributed generously. We do not ask assistance from them, but we beg that those who have not hitherto aided us will now do what they can.

SPIRIT VOICES.

The editor of Spirit Voices has lately given a valuable notice of our Magazine in his paper, and desires a reciprocation. He says that he cannot agree with all the theories advanced by our writers. We could not expect him to do so, for many of them are untried and suggestive only, but the foundation is truth, and an honest search for it is being made. While we believe that the generous editor of Spirit Voices and the advocates of modern Spiritualism are actuated by the same motive, an earnest search for truth, we must express our dissent from many of the theories advanced by them as courteously as the editor has dissented from ours.

The writer has made a study of this subject in all its phases, and is not a disbeliever in spiritual manifestation. He has endeavored for years to analyze and understand the movement, and test whether its fruit be good or evil. He can produce many remarkable phenomena himself.

A gentleman of high standing in one of the largest cities of the country said to him one day, in reply to a question upon another matter, "I am investigating a subject of far greater importance."

"What is it?" asked the writer.

"The immortality of the soul," he replied with emphasis, "and I will prove it by modern Spiritualism."

"I am rather surprised that you should think this necessary," answered the writer, and beginning at Moses and the prophets he sketched many of the incidents illustrating ancient Spiritualism—the three angels who appeared at Abraham's tent, the angel who appeared to Manoah and his wife, the raising of Samuel by the woman at Endor, appearance at the crucifixion of many of the dead walking about the streets of Jerusalem in their grave clothes, and the visible presence of our Saviour for forty days after his resurrection.

"Where do you find all this?" asked the Spiritualist.

"In the Scriptures," replied the writer.

"That is new to me," he answered.

And the modern Spiritualists who deny the truths of Christianity are equally as unacquainted with the Scriptures. They do not study Moses and the prophets, and are not aware that they will find in the Scriptures spiritual manifestations more wonderful than any that they claim to produce.

We do not deny the wonderful nature of many of these phenomena. It is folly to assert that they are produced by fraudulent means. But we would ask, "Is this power of God or is it of Satan?" Has modern Spiritualism soothed the dying bed? Has it eased the troubled conscience? Has it made men higher or purer in life? Has it helped the poor and needy? To us it appears cold, frigid, intellectual only, without one particle of heart amid its wonderful manifestations. It rejects the faith that has made our country glorious and has brought it to its present states of civilization.

These manifestations are evidences of a great revolution in the affairs of mankind. They were rife in the time of Saul, when a great catastrophe occurred to the kingdom of Israel; they were rife at the time of the coming of Christ; they were rife when the united colonies of New England arose, and the colonists looked for the second coming of the Messiah; at the beginning of the war of slavery, and they are rife now. Hence, many have left the religion of their fathers, have denied the inspiration of the Scriptures and have gone to seek strange

doctrines. We believe that Spiritualism is one of the questions of the day, and it demands investigation; but modern Spiritualism appears like the religion of the French in the time of the Revolution, the worship of God is left out, and the Son of God rejected. He, the man of sorrows and acquainted with grief, is despised. But He foretold of these dreadful days now so close upon us.

We wish to call the attention of our readers to the fact that we have on hand a number of charts of the Great Pyramid. The plan was drawn by Mr. A. A. Honsberg, one of the first draughtsmen of the country. It exhibits very clearly the proportions and method of construction of the Great Pyramid. A drawing was first made in Pyramid inches on a scale of 100th of an inch to the foot. But Mr. J. Ralston Skinner of Cincinnati begged us to construct it according to the measure of the British inch. Mr. Skinner believes that the British inch of to-day is the original exact length handed down from generation to generation, and mysteriously preserved intact and exact through thousands of years. We at first combatted Mr. Skinner's theory, but after a lengthy examination we made a discovery of an important character, put forward in the paper *What is the Pyramid Inch?* Vol. 2, No 3. This convinced us that Mr. Skinner was right, and the chart was constructed with the use of British measures. We propose in our next to give a plan of the chart with the measures thereof, taken from Mr. Skinner's 'Crown Jewels.'

We have received from Mr. V. M. Cox a copy of this pamphlet "Ephraim-Israel, the Pivot Nation of Prophecy and History," being a lecture delivered before the Metropolitan Anglo-Israel association on January 14, 1885. From this we quote the opening paragraph:

"A thoughtful and unprejudiced student of Holy Writ, one who comes in humility and simplicity to the inspired page of

God's sacred Word, prepared to accept its assertions as incontrovertible, and its predictions as infallibly certain of fulfilment, must inevitably arrive at one definite conclusion—namely, that in all Biblical history there is one central theme, in all prophecy one central design, and in all the workings of providence one central purpose—or it may be said two, yet the two so indissolubly associated and connected that it is impossible to separate them, or to speak of either, without in some measure involving the other. They are, the mission and ministry of Israel's Messiah and the history and destiny of that elect nation whom He came to redeem, and over whom He will return to reign gloriously. It is with that nation that this short paper is principally concerned, and hence its distinctive title, 'Israel, the Pivot Nation of the Bible.'"

REVIEWS.

'INTIMATE CONNECTION BETWEEN GRAVITATION AND THE SOLAR PARALLAX.' By Thomas Bassnett.

We have before us a pamphlet of 16 pages by Professor Thomas Bassnett. Professor Bassnett says: "When it is remembered that all the time, labor and money spent on the great question of the solar parallax amounts to many millions of dollars, and that this money has been paid and much will yet have to be paid by the unscientific, it seems the people ought to know something about the matter, and in this humble essay I feel it a duty to show how all this labor and money has been needlessly thrown away, as every planet in the system has stamped upon its disc, by its sidereal period, the value of the solar parallax, differing very little from the value obtained by Bessel from the transit of Venus in 1769, which gave 8.578. This theory gives 8.550, and is fortified by its intimate connection with a general law, from which gravitation proceeds. We will first, then, bring forward an important feature in the motions of the planets, hitherto unknown and unsuspected, and afterwards show the *raison d'être* for such a re-

lation. Taking the mean distances of the planets as the radii of so many circular orbits, then we find that the following law obtains throughout the solar system: *The orbit velocity of each planet in miles multiplied by the time in seconds which a ray of light takes to pass from the sun to that planet is directly as the square root of that planet's distance from the sun in miles.* The sidereal periods of the planets are accurately determined by observation. The mean distances depend on the solar parallax, which is now as uncertain as it was fifty years ago." The distance of the earth from the sun is given in Professor Bassnett's table as 95,693,000; square root of the mean distance in miles, 9,782.3; orbit velocity in miles, 19.0524; and the time for light to pass from the sun, in seconds, 513.585. Now, the first essential is to have the distance of a body from the sun for the purpose of determining the orbit, and without the correct distance we have no correct orbit; hence we have no means of obtaining the orbit velocity. If we have the length of the orbit of a body we simply divide that by the number of seconds in a year. This gives the distance that the body moves in one second of time. We beg Professor Basnett to prepare us a brief paper for the next Magazine.

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It is edited and published by C. H. Jones, 77 Clark street, Chicago, at \$1 per annum.

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'The Gospel According to St. Matthew.' Translated from the Greek text of Constantius De Tischendorf and other standard textual authorities. By Charles Gardner, M. A. Printed on extra heavy, tinted paper, elegant cloth binding. Postpaid, only sixty cents. C. H. Jones, 77 Clark street, Chicago, Ill.

'The Number Counted 666, and the Name Counted 888.' By the Rev. James Upjohn. These books investigate the numerical value of names in the Hebrew Scriptures; they are companion volumes, price one dollar each. They will be sent, postage paid, by remitting the price to Rev. James A. Upjohn, Neenah, Wisconsin.

'The Waters Above the Firmament, or the Earth's Annular System.' Address Isaac N. Vail, Barnesville, Belmont county, Ohio.

The Messenger—A weekly journal devoted to the elucidation of prophecy and the identification of the British nation with the house of Israel, God's chosen people, his inheritance. Edited by Annis Unwin, 84 Oxford street, Sheffield, England, and published by John Heywood, 11 Paternoster Buildings, London, E. C., England. Yearly subscription, 10s. 10d.

The Banner of Israel—A weekly paper advocating the identity. Edited by Philo Israel and printed by Robert Banks & Son, Racquet court, Fleet street, London, E. C., England. Annual subscription for one copy weekly, including twelve double numbers, post free, 7s. 6d.

Israel's Hope and Destiny—This magazine, which has been published for five years as a monthly, will henceforth appear as a quarterly. It advocates the identification of the Anglo-Saxon race with the house of Israel. The editor is Douglas A. Onslow, J. P.; publisher, Robert Banks, Racquet court, Fleet street, London England.

The International Standard.

CLEVELAND: 64 Euclid Avenue

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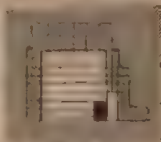
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Vertical Sections of King's Chamber, Ante-chamber & South end of Grand Gallery
LOOKING WEST LOOKING NORTH.

Scale for these five Sections $\frac{5}{32}$ inch 1 foot.



LOOKING WEST LOOKING NORTH.
Vertical Sections of Queen's Chamber.



LOOKING EAST.

ROCK LEVEL

ROCK LEVEL

LEVELLED ROCK



THE COFFIN.

Scale: $\frac{12}{32}$ inch 1 foot AIR HOLE

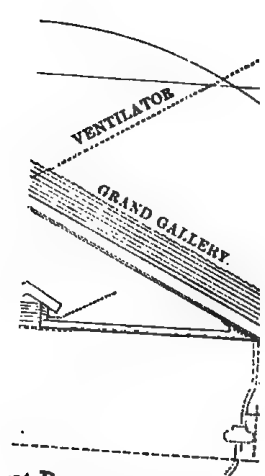
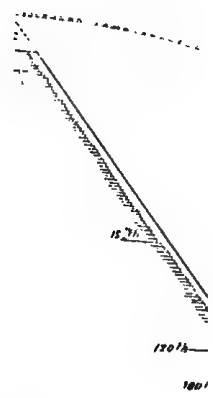


Plan of King's Chamber.

Scale: $\frac{4}{32}$ inch 1 foot.

ROOF SQUARE
SEA LEVEL





at Pyramid of Jeezeh
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BY THE
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 and Perfecting
 MEASURES.
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THE
INTERNATIONAL
STANDARD

A MAGAZINE

DEVOTED TO THE DISCUSSION AND DISSEMINATION OF THE WISDOM CONTAINED
IN THE

GREAT PYRAMID OF JEEZEH IN EGYPT

JANUARY, 1886.

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Until the articles of incorporation are taken out, this Magazine is published on the responsibility of Charles Latimer, therefore neither the members individually nor the Society as a body assume any liability.

All in favor of advancing truths most absolute, as portrayed in the revelations of the Great Pyramid of Egypt, and of the success of the Society in preserving inviolate the Anglo-Saxon weights and measures, will kindly communicate with the President, by whom also subscriptions, donations and communications will be gratefully received.

THE INTERNATIONAL INSTITUTE

FOR PRESERVING AND PERFECTING THE ANGLO-SAXON WEIGHTS AND MEASURES

CLEVELAND: 64 EUCLID AVENUE

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BIBLICAL ASTRONOMY.

When the tribe of Simeon appears their ensign will be some form of a sign commonly named The Fishes (Dagim), where we have two fishes bound to the neck of an immense cetus or shark. As a fish is the emblem of hatred, so here we have Messiah, and Israel with him, rejected of men, and for a little time * subjected to the "contradictions" of the rebel archangel and his crew of apostate spirits. Moses for some cause makes no mention of Simeon in his last review (Deut. xxx), but Jacob couples him with Levi, whose ensign was the altar in the galaxy circle that represents Messiah offered for the sin of the world by wicked hands; and he says, "Simeon and Levi, brothers, the iniquity of their purpose have they accomplished." † They have rejected and slain Messiah; and this he figures as houghing a bull, or (as some read) digging through a wall, and Messiah is a wall no less than a bull—a leader and guard. (Lam. ii, 18.)

* Heb. 2, 7, 9.

† This is the sense given in the Septuaginta and indicated in the Samaritan, where the archaic *kali* becomes *kalu*, the regular form of the verb; a change that no orthodox Hebrew would allow, for their purpose is to preserve the text entire as it has come down from the most remote times, though as here and in other places, the Mesorites have mistaken *kali* for a noun, and printed it as if it was constructed to the plural of *kelim*, instruments, vessels.

All Jacob's words here are blessings (Gen. xlix, 28), but in this case (as in v, 4) he blesses Messiah in cursing his enemies. "I will divide them in (Jacob) wisdom; I will scatter them in (Israel) power." The empire of darkness and its subordinate kingdoms and societies on earth shall fall into incurable dissensions and disappear from under the heavens of God, righteousness and truth and love alone remain as things eternal that can never fail. The letter forms of this sign are all instruments of violence and force, a hammer, a maul, a club, a sword, a spear, etc. With the tribe of Gad comes the sight of a lamb, with fleece of gold and horns of brass. Moses perceives him couching (as he does) like a lion, and ready to dash the mightiest of his foes with a blow from his head. (Deut. xxxiii, 20.) Jacob sees Messiah overcome by the rush of a host, but declares their overthrow at the end. Moses makes him leader and sharing the honors with the Lawgiver himself. This is purely astronomical. Aries takes the first part of the month Abib, while Taurus takes the second; and in the days of the Exodus he had become the opening sign of the old sacred year by being in the vernal equinox. The first half of Aries also rises with the crown and ceptre of King Cepheus, a form of the first father and lawgiver of the race. One of his feet passes through the line of bands that connects the two fishes in Pisces-Cetus; for by the suffering of death only can Messiah, and Israel together with him, render harmless and terminate the contradictions of the sinning, so these shall no more annoy them forever.† Of the letter-forms belonging originally to the sign Aries, the most are drawn from a serpent strangling two human beings at once, though sometimes there is but one, and sometimes (as in our figure 8, an old form of this sign) there is only a serpent

† One name of this sign, shared by others indeed, but chiefly used for this, is Jazer (Jehovah the Helper). One of the most singular astronomic references in our older books is to this as a new planting for the vine of Sibmah (Healing), a form of the tree of life among the twelve signs (Isa. xvi, 9; Jer. xlviii, 32). Her branches have been broken down in her native soil by the "lords of the Gentiles"—Satan and his aids—so she is uprooted, pruned and borne beyond "the sea" even to the sea of Jazer (*i. e.*, the sea bordering on Jazer), or to Jazer itself; Aries being the first form, and after leaving the shore by Zidon upon the celestial sphere. The "weeping of Jazer" seems to be the weeping at the Autumnal Equinox for the Mediator's departure from the world of the living with the sun from the upper hemisphere. (See under Dan. *supra*.)

that has died in the attempt to shorten the life of Messiah. Our own H is a secondary form of the old Heth, that is found with two cross strokes upon the Moabite stone, while in coin letter there are three cross marks, and in old Phœnician is a form still nearer the original, having one cross mark in the middle and two half cross marks in the opposite directions from each upright stroke, the one near the top and the other near the bottom. To many forms are attached the heads or tails of serpents, in both east and west.

But when Ephraim appears for Joseph we have the most splendid sight of all, for in Taurus are the brightest and richest groupings to be found anywhere upon the face of the skies, though far south are groups of stars of the first magnitude, as there are not in the north. In the centre is a bull, sustaining upon one horn a shepherd with kids (or lambs, Isa. xl, 11) and their dam, while he bears down upon a giant and dogs in front and below. That giant is the Chesil of the Hebrews, the Orion of the Greeks, the atheist Hiranyacaspu of the Hindus. Chesil is one foolish (fat-witted) and stupid, one that is too proud and too dull to reason that God must appear in humanity if he will manifest his deity to all ranks of created spirits; and so when he heard of an alleged decree that man should be lord of hosts, he refused to believe it to be from God; and to show it to be without authority, he drew man into sin when he had been appointed his guardian, an act whose atrocity can never be realized by a created mind. The Hindus make their form of him originally the head warder of Vishnu, the Mediator, and for arrogant demeanor, with his next mate, he was sent down upon earth, where both were to be born thrice, and one of his names was to be Hiranyacaspu, the golden-clad, the real meaning of Orion among the Greeks.* Along with Orion we must notice his two dogs Hate-light† and Rend the weak.‡ The former is at his feet, in the world of the dying and dead;

* Where he sets his foot springs the river Eridanus, that widens to a sea in the region below and then contracts to a river, whose place is marked by the star Achemor, near the southern pole; and this is the Styx Virgil (Geor. i, 243), the river of hatred and death. The Eridanus may be the same from *eris*, hatred, contention, but more probably Jordan, the descending from *Yarad* to descend, which also may be the root to *eris*, strife.

† Calns Sierus-Kayin Zohar. ‡ Procyon-Porek—on.

the other is above at his back, in the world of the living. The first is spiritual wickedness, the last is brute violence, hierarchial usurpation, military tyranny, that is ever attempting to influence the minds of men with fear of bodily harm and hope of sensual pleasure, instead of caring for the wellbeing of the body through the right action of the soul. This infernal dog is represented by what is called the dog-star, the brightest of all the stars, and he is held to be the mate of Hiranyacaspu, as his name is Hiranyacsha, or the golden-eyed, the Chrysaor of the Greeks, that some make a mate of Pegasus as sprung from the blood of Medusa, and father to such monsters as Geryon, Echidna and Chimaera. Concerning the Hyades in the face of Taurus and the Pleiades in his neck, we are left much in the dark. The former take the form of the half opened door of life in Taurus that is never shut, and their brightest star is the third cherubic star of the four, while its name is *Aldebaran*, which may signify the Director, the Forerunner, or the Breaker through.* It is undoubtedly (like the others) an emblem of Messiah loosing the door of life that the dead may arise with him and come into the upper world; but it is not put for Him at all, since He is already exalted above his foes; and Orion may stand, if permitted, forever aiming his arrow at the gate of life without having occasion to shoot, for they are all gone through and are out of his sight, as out of his reach forever. There is no clear notice of the Hyades in our Scriptures, not even in Joshua, unless by the name Adummim or the Reds, because the red Aldebaran is among them, and this is in the field of Judah's ensign (Ch. xv, 7) as it is in the hemisphere of Leo, and Judah's ensign is thought to be the whole sphere, as Judah (Messiah the Praised) is Lord of the whole circle of nature. (Oedipus Judaicus on Josh. xv.) Scaliger and Bayer, both pre-eminent authorities, affirm that the Hebrews used Adum (the Red) for Aldebaran. En. Shemesh, the eye or fountain of the sun, or the Terrible, the Dazzling, may be the same, though this is doubtful.

* This gate of life is referred to when it said to Cain "a sin lieth by the door." This sin is an animal foe, a sin offering, and in the world's exaltation; he atones for all in that is evil.

But as to the Pleiades the case is different. They have been always seen in the Hebrew Kimah, or the Cluster (Job ix, 9, xxxviii, 31; Am. v, 8), and their delights or sweet influences (Job xxxviii, 31) are thought worth noting in our grandest instance of Paradise Regained that the world is ever to see. The Pleiades are called Benoth, the daughters or young maidens (Gen. xlix, 23, Heb.), and the Succoth-Benoth of the Babylonians (2 K. xvii, 30) seem to have been tabernacles wherein the worship of the Pleiades was celebrated. What they represent is quite uncertain. In Greece they are named the nurses to Dionysus, when he is no longer Bacchus the Bewailed, but the Divine, the son of Nysa or heaven. But as he was the Mediator—God passing down into hell at the autumnal equinox and therefore (Bakui) bewailed, so at the vernal equinox he was (Jah-nuah) Dionysus the Divine, giving rest while himself entering into eternal rest, and so they rejoiced as they had mourned at the opposite season, and this is continued in our Easter or Exaltation (resurrection) service. As the Mediator has to bide his time for seven ages before he can so show up his foes that they can never again gain credit among creatures and disturb the universe with either false rumors and dogmas or physical violence, so these are imagined in a group of seven stars in Taurus, and by some these are impersonated and named the nurses or hostesses of the Son first sorrowing, then with joy entering into rest. Of the Pleiades the Hindus say that they were once mates to the seven princes (Rishas) represented by the seven stars in the Benetnasch or hind quarters and tail of Ursa Major, in the region that is still named Paradise in the sacred astronomy, but for suspicion of some fault six (that are highest now in the Pleiades) were sent down into the neck of Taurus.† This fable looks to a time when the neck of Taurus was still below the equator and so in hell, or the world of the dying and the dead. This was about the time assigned in our Hebrew text for the fall of man; and these exiles could

† The seventh of these is still seen as the star-satellite to Mizar and named Alcor, the tried, the pure. Those ancient forms of thought have been wonderfully preserved, though usually in distortion among the heathen, and through them we find aid in our study of the divine Word where we have least reason to expect it.

hope to revisit the upper world and remain in at least the purlieus of heaven when Aries came to lead the year, for Aries is the sign of expiation for faults and sins: the Lamb takes away the sin of the world. It may be to this that reference is made in Job (38, 31) for the (*maadaunoth Kimah*) delights of the Pleiades may be the joys of the world to come and the hope of these during the present life, that none can hinder the pure from realizing, and so we may read, "Canst thou make sure the delights of the Cluster?" The proper answer is, no; but God can and will, he is both able and willing.

The hostile sect of the Greeks, after the disruption of the old Aryan confederacy upon the Oxus, has reversed the Hindu myth and made the seventh of the Pleiades to have flown away up to heaven through disgust with her sisters, who had fallen into vice. This would indicate that of the seven ages of man one was sinless, and this was the Paradise period before the apostacy of angels and men. But among the Greeks a certain school prefers to assign gods as suitors to six of the Pleiades, while one of them (Merope, a person of sorrowful countenance) married Sisyphus, a mortal, and so her star is dim. This explication is utterly unaccountable, and contrary to anything in history of which we have any correct knowledge. In every human society its first state is the best, and almost everything deteriorates in time. Truth popularized becomes debased and less valued. True, in the world of study and teaching and in the general action of society, there may be progress, but as to what makes the true greatness of a people, the personal wellbeing of the masses and their conscientious life, the first state of a people is the best. Of the seven churches addressed through St. John in the Apocalypse, the first four steadily deteriorate; the fifth receives some degree of reform, but is far from perfect in this, it has gone but half the way to its proper goal; the sixth is more fully reformed and is much praised, but the seventh is the sixth retrograded, and Laodicea, popular rule, is loathed, and it is time for the judgment to sit upon a world that will not yield its vices, and a church that has forgotten God and the lives of his grandest servants in all past ages. The greatness of a people is the greatness of a few

individuals, and these are sent to be God's witnesses to what is noble in life and work in the midst of abounding baseness.

So much for the Pleiades and what they indicate. Their being upon the meridian when the old polar star in the tail of the Dragon looked down at the angle indicated by the downward passage of the Pyramid, may properly signify that a time of reform was near in the call and mission of Abraham, and that the world had relapsed into an apostasy as universal as man. The Aryan schism had not yet completely broken into the hostile and godless factions of China, India, Persia, and the west; and the Ammonians had renewed the once prevalent idolatries of the countries about the Euphrates of the west and the Nile, and even the patriarchal line in Mesopotamia, when a part had migrated from the springs of the Oxus, had shown but too well what Israel would do after Joshua, and what the Hebrew Christian world would be sure to do after St. Paul, and before splitting into the hostile sects that canonised John the Faster, Mohammed and Hildebrand; when the mother of Jesus received more honor than she thought of claiming at the failure of wine in Cana, or when Jesus was tasked almost beyond endurance in his work at Capernaum by the sea.*

When the tribe of Benjamin appeared in the long line of march toward the Red Sea, the spectator would behold for their ensign perhaps two friends closely embracing (Deut. xxxiii, 12), or their substitute, a wolf.† These were both recognized forms of the Gemini in the Zodiac; where we now have a Herakles and an Apollo, where once were men or women embracing, or a man and woman sitting side by side, and where Castor and Pollux were seen mounted upon snow-white steeds, that fore-show the last stage of "the war" in the next sign, when horses have been substituted for the asses that we still preserve in the names of their stars upon our own spheres. There are two

* The letter forms of this sign are a serpent expiring or dead, a serpent broken backed, a serpent imprisoned (in the east shut up in a bottle), etc. The serpent is put for Orion and his dogs and river. Among Egyptian forms, one is that of half the skeleton of a serpent cut lengthwise through the spine from end to end. The offender is cut asunder. (See under Centaurus-Lupus-Ara).

† Gen. xlix, 28.

wolves upon the sphere; one in each hemisphere, beside the wolf (that some make a panther) Cenntaurus is slaying in the Galaxy circle, that is independent of the Zodiac in every part. So of the Castor and Pollux of the west; in some systems they are together in Gemini; in some they are separated and the one is in his proper sign while the other is in the lower hemisphere—in the world of the dead. So upon a Hindu, Zodiac, * Gemini, as the tenth sign, is represented by a man standing and extending arms, while for a breast-plate he has a circle and inscribed cross, a form of the tenth letter in one of the Egyptian systems, and the source of two numeral systems. The Hindus, Burmese, Persians, and a few others use the circle (zero) at the right hand of a form of A (Aleph) to denote the numeral ten; † while the Chinese, Italians, and certain Egyptians use the cross alone. This sign denotes the spiritual marriage so much talked of among mystics, and allusions to it are somewhat numerous, as in Ps. xlv, the Song of Songs throughout, the Hephzibah and Beulah of Isaiah (lxii, 4, 5), Rev. xix, 7, 9, and others, besides the descriptions of Jacob and Moses mentioned above. The letter forms of this sign are usually some form of a hand, a hand and arm, a sceptre, a serpent paralyzed by a rod, and certain others, so among the Greeks and others Hippa was a horse, a sea, a ship, the soul of the world, a priestess, etc. The forms of most letters are quite numerous, and this affords no exception to the rule.

At the coming of the tribe of Issachar one would see some form of the sign Cancer—as an ass (Gen. xlix, 14), and perhaps a horse harnessed for war, or a camp. (Deut. xxxiii, 18). The ensigns of Zebulun and Issachar are presented in a single view by Moses, and he adds "They shall call the people to the mountain; there shall they offer sacrifices of righteousness (or appropriate sacrifices), for they shall suck of the abundance of the seas and of treasures hid in the sand." Deut. xxxiii, 19. Here (as in various other places) Moses shows clear traces of his Egyptian training. When the sun

* Oedipus Judaicus, Plate IX.

† 10, 20, 30, etc.

was in Zebulun (Capricornus) the country was all green from the seed sown in the retiring waters, and when it was in Issachar (Caucerselli) they had gathered their harvest a little before the coming overflow of the river. In each case the people flocked to the temples—in that country all reared upon high mounds, so as not to be incommoded by the Nile inundations—and there they offered sacrifices of thanksgiving for the prosperity of their agricultural labors during the year. As this was the sign where the Scarabaeus or Beetle was placed by the Egyptians, so one of its names was Amalek or the beetles (if not locusts), a power wasteful and destructive, for here the malignant powers are fully shown up as wasters and destroyers, not producers of anything but mischief, and finally (for the time at least) subdued. The enemy is bound when the sun is in Cancer, according to the sacred astronomy; but he has the privilege of appearing again once more at the close of the Millennium, and then (when the sun is in Leo at the autumnal equinox) he is to be forever banished from all power of working mischiefs in the world that God has created for his own glory in the wellbeing of his intellectual creation, not for the gratification of the malicious and the evil.†

Finally, when Judah appeared his ensign had for its principal figure a lion couching down for repose. (Gen. xlix, 9). Moses only says, "Hear, Lord, the voice of Judah, and bring him to his people: let his hands be sufficient for him, and be thou an help to him against his enemies." (Deut. xxxiii, 7). But Jacob, meditating upon his ensign when he gives it, at the same time sufficiently describes it: "Judah! O lion's whelp! from the prey, my son, art thou gone up. He stoops down, he is couching down as a lion, and as a fierce lion; who shall stir him up?" He then describes the attitude of Leo on the solstice with relation to other signs. "The sceptre shall not depart from Judah, nor the lawgiver from between his feet until

† The war with Amalek lasts from generation to generation (Ex. xvii, 16), because the wicked will not yield, nor will God; he must go through. The letter forms of this sign are a cave, a house, a hollow hand, an arm and hand covering or upholding a serpent grasped by a hand, or paralyzed by the touch of a rod. This sign was in some systems one of the two gates of the sun (see under Zebulun supra) for here was interposed water that must be passed in a ship, of which a horse is a figure. (Hab. iii, 8, 15.)

Shiloh come, binding his foal to the vine, and washing his garments in wine, . . . and against him shall the gathering of the people be." During a portion of the year King Cepheus with his sceptre is below the feet of Leo upon the opposite side of the pole, but when the sun comes to Scorpio, of whose names one was Shiloh (see under Dan supra), the king and his sceptre are seen, in late night, not directly under the feet, but turned a little to one side. He (Shiloh) binds his foal to the vine; Shiloh is the sun's dwelling place and one of his names during the season of vintage, the season of the autumnal equinox.

The letter forms of this sign are usually scourges of various shapes. The 119th of our psalms is a meditation upon the letters as emblems of Messiah and his works, and a representation of Messiah's mediation for them that have sinned on earth under the trials of life. Hence, in this grand oration we have all the letters of the old sacred alphabet (or rather Aleph-Tau) with mediations upon these as they rise.

As the first letter (Aleph) represents Virgo Arimech, and its secondary (Alluph) signifies a prince, so the first (or Aleph) section is taken up with describing the character of a princely spirit, sincere, truthful, walking in the law and aspiring to still higher and higher conformity with its requisitions.

As the second letter (Beth, a house, a just measure), represents Libra, so the Beth section of our psalm portrays the character of a just man giving himself day and night to the study of the word, both in heaven and earth, that his heart and life may both be pure and blameless.

As the third letter (Gimel) corresponds to the third sign (Scorpio [Aquila Serpens] Ophiuchus, so in the third (or Gimel) section Messiah prays to be preserved alive in his fulfillment of a covenant to pass through horrible dangers in his attempt to overthrow the malignant powers and rescue man from their dominion that are ever drawing him into sin and sorrow.

As the ninth letter corresponds to Taurus, Auriga, over Orion and his fiends, and denotes the resurrection from death, with clear victory over the malignants, so in the ninth section of our psalm Messiah acknowledges that he has received the

aid for which he prayed in the Gimel section, in accordance with the everlasting covenant. The intervening sections are less clear than the third and ninth, though in the Vau section (corresponding to Aquarius, Aristaeus and the Urn) he repeats the prayer in Gimel and mentions the everlasting covenant, while he further asks that his humiliation in becoming man may not lose him the respect of the universe because he is reproached for it by the vain glorious archangel and his crew of both spirits and men. We may reasonably expect the cherubic letters to head sections more clearly than the others denoting their ideas; and so the Lamed section (corresponding to Leo and looking to judgment and truth wherein he is visibly raised to supreme power), we hear him declare that the "ordinances of heaven" have had their dominion set in the earth; judgment is brought fourth unto victory.

In the Daleth section (corresponding to Sagittarius killing the serpent at the hazard of his own life, Gen. xlix, 17), he reminds the spirit of his covenant that has been accepted and established, saying, "I have declared my ways, and thou heardst me." He asks nothing not engaged him from before eternal ages, and will do and say all he has engaged to do and say.

In the Cheth section (corresponding to Aries and his sacrifice of himself for man) he complains that the bands of the wicked have robbed him; but at midnight—in the world's darkest hour—he will arise and show the Father to be glorious in praise.

In the Yodh section (corresponding to the Gemini and his setting up a sodality hated on earth but destined to dominate it in due time), he foresees the joy that his redeemed will experience when they find that he has overcome death and returned to the upper world, though he has passed through infinite sorrows while he has wrestled with the powers of darkness in their own holds; and he asks that the proud—the apostate angels—may be shamed into everlasting silence, while all that venerate God shall come to him and find unspeakable and eternal joy.

In the Kaph section (that corresponds to Cancer-Aselli), he complains that he is ready to faint and sorely afflicted; his eyes

fail with looking for the fulfillment of the covenant, and his very form has become died and shriveled like a bottle being in smoke and heat. He wonders how long he is still to suffer with his witnesses that lie slain about the altar and none regard. He has been conspired against, and almost destroyed upon earth; but he will not turn aside from his work, and he knows that it shall come out right at the end. He adheres to the law, as will every true man in the world.

As to the Galaxy system and the signs of punishment to the extreme south, there is to most no clear allusion in the Scriptures; but we may find more in it as we proceed than many suppose. Let us test the matter fully. The signs of this circle are four, and they occupy about ninety degrees each. It has been generally customary to treat the stars upon each side of the zodiac as being closely related to it; but this is true to but a limited extent. Below Cancer, Leo, Virgo and Libra, is the Hydra making signs of flight toward the west. Upon the Hydra, below Leo, there is the cup of wrath; a little farther on is a raven devouring the body of the monster, as if he were already dead; and near the tail is an owl, that seems referred to in Isaiah (xliii, 20), where it is said, "The beast of the field shall honor me, the dragons and the owls; because I give waters in the wilderness, and streams in the desert, to give drink to my people, my chosen." The cup also seems referred to in the Psalms (lxxiv, 8), but this is uncertain.

But in the galaxy system proper we have the way of man indicated, as in the Pyramid; and Messiah is everywhere with him to guide or bear him up till he returns, purified and glorious, to the paradise he has lost by sinning.

Near the superior pole, and almost directly over the Tauric group, we see among the stars the figure of a bow, not far above the shepherd and his kids; and not far off toward the right is a rather bright but variable star. These indicate the position of a divine man named Perseus (Peras, Perats), the breaker [of bonds.] His bow hangs over his shoulder; and that variable star is Al Ghoul, the head of Medusa, the Gorgon (*Rosh ha Satan*) that he holds in his left hand, twining with snakes for hairs. This is a sign that he has overcome one that

has the power of death. A little farther on is a chair, and almost directly above Aries is a line of three rather bright stars, having a nebula near the middle star—the only nebula visible to the naked eye. A little to the left of that chair are scattered several somewhat bright stars. In that chair sits Cassiopeia, the woman of veiled (sorrowful?) countenance. To the right from her as she sits is her husband, "the lawgiver"* (the kingly man), King Cepheus, or Kaikous, a well-known name of the first man among the Asiatics of the west. These three rather bright stars by the visible nebula, over Aries, are the stars of their daughter, Andromeda (*nadar mutha*), one devoted to death; a figure of the human race exposed to death through the over-weening pride of their mother, who desired that her children should become gods. She (the poets relate) has said that her own beauty is superior to that of the sea-nymphs; and for this her daughter is bound upon the sea shore, over Aries and Cetus, to be devoured by this monster; that Perseus is made to turn into a rock by showing him the Gorgon's head, when he rescues and marries Andromeda. Here we have a mystical account of the fall of man and his delivery through Messiah's triumph over death. The later Jews certainly represented the fall of man in this way, for we find the Andromeda-legend in Josephus,† who locates her binding upon certain rocks on the sea shore near Ashkelon in Palestine. All the current forms of our star-mysteries have come down from man's very first age, though some have taken local colorings on the event of their transmission to our times. The Cepheus group has come, with the others, from the first man himself, who tell us (Ps. xix., 11) that he has been warned, by a right explication of the celestial signs, in what calamities he should involve his race if he sinned, as he has not done at the time of writing his confession (v. 13).

The letter forms of this sign are mostly drawn from water in waves (M), and there are water tanks, ships, etc., the latter sometimes guarded (or piloted) by a serpent, that represents Messiah as victor over the powers of hell. In the Hebrew terminology the law, as the life of the world, is water; and the

*Gen. xlix., 10 (see under Judah). † Ant.

name of the thirteenth letter (Mem) signifies water. One of the figures of Messiah among the cabalists is a bird leg deep in the ocean of the law, repeating to the central column (the divine Unity in Trinity) the words when "Hear, O, Israel!" is cried on earth. Hence there is no surprise to find the Mem section of our 119th psalm opening with a panegyric upon the law, under which man is condemned to death in his apostacy unless a God descends and suffers for his rescue. Hence the Cepheus group is well represented by Mem—water—among the letters. This is the first of the last ten letters that must be divided among the four signs in the Galaxy system and others below them toward the south. The certainty of our conclusion is clear. The second of these signs is a ship, and the second of these letters (Nun) is a ship. The last of them contains a cross as its principal figure, and the last of the letters is a cross.

The second of the Galaxy groups (we have said) is a ship sailing over waters. It is named Argo, or *Argha*, an ark or float: as once was Capricornus: for this latter is the Argo of fable, while that of the galaxy is the Argo of the mysteries concerning regeneration, for here again man is borne over the waters of the law that are death to the sinning; and this also in a ship whereto Messiah has turned himself.

The letter form of this sign, we say, is a ship or ark, and there are fish or serpents in some systems: the name (Nun) may signify a fish (as in some dialects) no less than a ship. Thus Joshua is the son of Nun, for Aries, his proper sign, rises after the latter half of Nun, the great fish, the Cetus that drags at the zodiacal fishes (Pisces). Nun is probably from the same root with Naus or Navis, a swimmer; and so a fish or ship may have the same name, as both float or swim over water, though a fish has the privilege of living (at least for a time) below the surface.

But every ship must have its master, its pilot and the wind for its propulsion over the waters; and so, after Nun for the ship, we have *Samech*—that has among others the form of a serpent biting his tail, an old emblem both of eternity and the eternal—for the master of the ship; then Ayin and then Pe for

its pilot and the wind that fills the sails. Samech is one that has imposed upon him some important duty, and so is a good title to one that has the general care of the ship and them that sail in it. Ayin is an eye, and so affords an equally good epithet for the pilot of a ship, who must watch the stars and beware of dangers from rocks and shoals and currents in the sea, while he keeps the ship upon the safest course determined by the master.* Pe is a mouth, or what comes forth of it—breath, words, etc.—and so, under certain conditions, it will signify wind, whereby the ship is moved in her voyage. Thus four letters may be appropriated to this sign.

The third in this circle is a horseman (Centaurus), spearing a wolf or panther near a blazing altar (Ara-Coeli), the principal figure in the ensign of Levi among the sons of Jacob. Paul seems to have this in view when he speaks of Christ slaying "the enmity" by the blood of his cross. The wolfish nature of unregenerate man is removed and gives place to what is lamb-like and self-devoting in love in the regenerate, and then the renewed man is ready for any sacrifice and any death whereby he may glorify God and confer spiritual benefits upon his fellow-man.

The letter form of this sign may be Tzade or Koph; each of these is a slaughter-weapon. As the wolf (or panther) is speared, so Tzade, a spear, is presumably the weapon of Centaurus; and this will leave Koph (whose shape is usually that of a battle-axe), in both east and west, to denote some means of punishing the wicked in the circle of judgment, one form of this being to cut the offender in sunder (Matt. xxiv, 51). It may, indeed, be put for the cross of Ixion, the great offender; or Satan, who attempted to usurp divine prerogatives; and so is made to set up an intrigue with the Queen of heaven herself, as the Hebrews tell of a Reuben that corrupted a concubine of his father's, a legend corresponding to the star-group Bilhah or Bulhah in the sign of the undoubted Reuben among the sons of Jacob on earth, she first and he after her, following Capricornus, the star of Jacob, as it sets below the sea. This cross of Ixion is directly below the feet of Centaurus, precisely as it

*This seems alluded to in Ps. xxxii, 8: "I will guide thee with mine eye."

should be, if our theory of it is correct; for in the Ixion legend it is said that Juno deceived Ixion by affecting to come to him in a cloud; and from this was born the centaurs. It was but natural, therefore, that he should be trampled under foot of his own offspring, for the wicked are punished by their own successes: are snared in the works of their own hands.

To the altar (upon which the Greeks say the gods were sworn in the war of the giants) may correspond the letter Resch (a head, a ruler, a scourge or sheep-hook in shape), a sign of dominion: for by humbling himself even to death, the Mediator God seals his covenanted right to rule over all things in his Father's power (Matt. xxviii., 18; Phil. ii., 9).

There still remains the letter Schin (a trident) unaccounted for. By its associations and its form (a fish spear) we must infer that it denotes Messiah controlling all things when he has overcome all his foes and the foes of man, after he has speared Leviathan himself in the bottom of the sea† (Isa. xxvii., 1). Perhaps, then, we should make Schin a substitute for the grand Phoenix Eagle that has arisen from the flames of the altar with man held in his talons, and is bearing him upward (though not on our spheres) toward paradise by the pole. This belongs to the fourth galaxy group that extends upward to the polar heights. Just above this eagle and Ganymedes (modern Antinoüs) is a cross that bears in some systems a dove or swan, and in others a man (Orpheus, Cronus, Prometheus, etc.) Near this is a lyre (Lyra-Vega), once a vulture that tore the liver of Prometheus, and on old spheres a vulture is behind the lyre, and clutches the frame with his talons. Hence some authors name this lyre and its holder vulture cadens (the vulture slain); for sin thwarted by the divine wisdom, joined with power, gives way to what is holiest and best; and the harmonies of the universe are more securely established than if they had not been disturbed. Here, then, is our final Tau (a cross) written (like Nun) upon the face of the heavens.

† One of the forms of Schin in Hebrew coin is that of a section from the spine of a fish or serpent, with three ribs cut off rather short and in an exact line each with the other. (See under Ephraim, Supra.) The offender is cut asunder from the neck downward, so that the spine shall be fully exposed; and this is the figure Paul uses (Heb. iv., 13) to denote the penetrating sight of the divine Word, the judge of angels and men.

Beyond these the infant Heracles grasps two serpents by the neck, or holds the three-headed monster, Cerberus, in one hand, wielding in the other a mace, while he sets one foot upon the head of Draco, the serpent by the pole (and once the polar sign) as he is springing upon Arcturus below to devour him alive, while his tail is between the great and the little bears. (For these, see above near the beginning.)

Thus, in pursuit of our Bible astronomy, we have gone twice round the heavens—once from Virgo-Azimech round to Leo, and once from the Cepheus group all round to the Swan at the side of Cepheus, and to the two bears, or rather wolves, for these have tails and bears have not; yet, by some means, men have always (so far as we know) named them bears—animals that avoid men and hide in forests, as did man when he had sinned. We are now ready to take up the first case of astronomic forms in the Scriptures—that of the serpent and Eden.

There are two Edens, as there are two Jerusalems, two Sions, etc. Eden first appears as planted (*mikkedem*) from eternity (Gen. ii., 8), and this has its correspondence on earth (v. 10). Man at his first creation is placed in the first in a happy and enlightened state, filled with divine communications and celestial inclinations, while his body was on earth near the sources of the four rivers of India—the Oxus, the Sanpu, the Ganges and the Indus—named in Moses respectively Pison, Gihon, Hiddekel and Euphrates (*Phrath*). The serpent, subtler than any beast of the field, is the apostate archangel himself, the sharpest and most crafty of all that fell with him, and are called (as in the Chaldee Oracles) beasts of the earth and terrestrial dogs. The tree of life grows from the pole, and the celestial signs in the zodiac are its monthly fruits. The tree of knowledge of good and evil may be a tree upon earth, interdicted to man as a proof of his obedience. We are not bound to receive all as mystery or conventional statement. Those Hebrews that peopled Scandinavia, upon their migration in colonies from Arsereth or the lower Donaw, called the tree of life *Igdrasil*, or the tree of perfected knowledge.* It has three roots: one deep down in the death kingdoms, one in the zone of human

* *Higgid-doresh-el*.

life, and the other at the pole itself—in hell, in earth, and in heaven.

Thus a part of the story of man's temptation and fall is told in the presentation of ideographs, drawn from the same source as the tribe standards and the stones of Aaron's breastplate, which are allowed by the Christian fathers to correspond to the twelve signs. So, of the closing account, God set (or rather had set) before the garden, Cherubim and the flame of a sword to preserve the way to the tree of life, so that man should not grope for it like the blind, and not find it. Here is Paradise, surrounded by the twelve signs, and raying out of it is the lambent light of the galaxy, that returns on the opposite side, after running almost down to the (*hadre teman*) chambers of the south, as Sion is in the (*yarcathe sophan*) "sides of the north" (Job xix., 9, Ps. xlviii., 2), the farthest off recesses of the polar regions. So the sons of Noah separated. They bore with them everywhere, in a state more or less pure, the ideographs of the first ages. Hence (*e. g.*) in India they make their mediator god (Vishnu) set his foot upon the pole star and pour down thence through the circle of the moon (the incarnation) the stream of life upon the roots of the tree of life (Jambu Amrita) where it parts towards the four cardinal points.

The next instance of the use of astronomical enigmas in the Genesis is in the fourth chapter, where Aries is couching near the door of life (ch. iv., 7), and the next is in the fourteenth chapter, or the war of the four kings against five. The commander was named Chedorlaomer, the band round the sheaf, according to the Targum, that puts sheaves in the plural. The heavens are a sheaf of corn, whereof the zodiac is the band. Again, each constellation is a sheaf, as in the dream of Joseph, who also dreamed that the sun and moon and eleven asterisms honored him in his sign, Taurus Auriga over Orion and his dogs. In the Oedipus Judaicus it is shown that every name in the story can be treated as denoting some aspect of the heavens. Chedorlaomer is the sun encircling all the heavens in his course; Amraphel may be the lamb of wonder, a form of Aries, the station of Aries or Mars; Tidal may signify a high mound like Gibeon, and Arioch may signify the victorious lion, Arye Nok.

But not to go into all these names here, as taking up too much room, we may remark that Abram (the exalted father) is also a title of the sun; and his three hundred and eighteen men, that defeated and plundered the whole army of the east, is the number of days necessary to add to the current year when it has gone wrong for a certain time. All is a mystical expression of the fact that in the family of this childless Hebrew shall all nations be rightly instructed in divine truth, and cast aside their idols in the last days. Melchizedek, who comes in at the end and receives a tithe so huge as to pass all credulity, is Messiah bringing forth everlasting righteousness and peace, and so Paul makes him a figure of the divine Son, who has neither beginning nor end of days, and makes eternal expiation for sin. He also brings forth the bread and wine, without being complicated with the rites of the temporary paschal season; and this again is Messiah setting up his reformed society, that the world hates and yet must augment from age to age, till it is honored by the whole earth. The whole account is mystical and to us obscure, since the astronomic meanings of many names have not been preserved to our times.

The next clear instance of astronomical enigmas used in story or prophecy is in the forty-ninth chapter of Genesis and the close of the forty-eighth. Of large portions from the former we have spoken already, but still there remain a few yet unexplained. At the close of the forty-eighth, Jacob is made to say to Joseph, whose two sons he has just adopted as heads to tribes, "I have given thee one portion above thy brethren, that I took out of the hand of the Amorite with my sword and with my bow." Like David, another ancestor of Messiah, he can speak in his person, owing to the organic unity of the family, and in giving Joseph a standard for his tribe he uses these words. He gives him Sagittarius with his bow bent upon the foe. An Amorite is a talker, a declamer, a teacher; in a bad sense, a vain-glorious talker, a boaster, a liar, an impostor; hence, it is an appropriate epithet of the vain-glorious archangel himself, and of such as are like him. The position of Sagittarius (Zidon) Messiah has won when the foe, driven out of Scorpio (Aquila-Serpeus) Ophiuchus, has fortified himself to

resist Messiah's advance, and now he gives the sign of his victory to Manasseh through Jacob.

It will be noticed that this gift is made by itself, and not in connection with the family in general. So, among the apostles, Paul stands by himself "as one born out of due time." The reason, probably, is that, like Manasseh, Paul makes a thirteenth, and there must be only twelve mentioned or counted at any one time. For a like reason it must not be recorded that Abram was born when his father was ten times thirteen years old, and so that is left to be inferred by putting together several facts, of which one is stated after the ascension of Messiah. (Acts vii., 4). Abram's mark is not thirteen like Seth's; (Gen. v., 3) but this is left for Ishmael and his descendants after him, till the end of the world, as also first to the adherents of Jeroboam and the heretics of the first five Christian centuries, for Ishmael's descendants have no settled place in history until thirteen times two hundred and three years from his circumcision at the age of thirteen, when their career is ready to be marked all down to the fall of the Turks by multiples of thirteen.*

It cannot but be noticed that scarce anything in the last words of Jacob and Moses can refer to the earthly condition of the Hebrews under the Theocracy, and Jacob expressly shows this at the beginning. Still there is no good reason why their earthly condition in the last days should be excluded. They, for instance, that shall "push the nations to the ends of the earth" are the ten thousands of Ephraim and the thousands of Manasseh (Deut. xxxiii., 17), the same of whom it was said long before (Gen. xlviii., 19) "He shall be a great people," and "He shall become a multitude of nations," where everything is plain and without the semblance of mystery. As to the whole, the Jews have ever referred nearly everything to the times of Messiah, according to the rule that all the prophets prophesied of the times of Messiah. A right apprehension of the relation of astronomy, as well as of artificial numbers and

* Twelve hundred and sixty years were to elapse from the Hejra to the occupation of Egypt by the Hebrews of England, and so the first Moslem period, from 622 to Omar, must be twelve years. Then all is divided by thirteen till the end, for 1260 is not an exact multiple of thirteen, but is short of thirteen times ninety-seven.

names, to the text of the Scriptures, will go far to render them intelligible, as they never have been since the apostolic age to the great body of the religious world, for, after the death of the apostles, Hebrew thought was scarcely studied, and the Hebrew language in its most external forms was but partially known, even to the scholars of Alexandria and Rome. Hence, artificial and spurious modes of interpretation became adopted, along with the vain philosophy of the Gentiles, whereby the darkness of the middle ages and the growth of popish frauds for many weary centuries became but too well assured. It is only by mastering the problems partly solved by St. Paul and the great Rabbinical circle in which he was trained that the supremely glorious truth of the Scriptures can be realized, in anything like its fullness, to modern times.

Searching investigation will discover many allusions to the old sacred astronomy not noticed in this paper, for no one can gather them all. They are frequently so subtle and obscure as to elude all but the sight of one divinely inspired. Thus "abundant waters wrung out" to the upright among the violent and lawless* may pass unnoticed by nearly the whole world, though it is to an adept a clear allusion to the sufferings of Messiah, indicated in Aquarius-Aristæus, when he receives into his urn, or swallows down the whole violence of the river of death. Again, Messiah ruling "from sea to sea, and from the river to the ends of the earth," may seem a Judaism for the land sworn to the fathers in western Asia; but this is too poor a patrimony for the supreme Solomon, and we must look for it in the celestial way. He shall set in the earth the dominion of the "ordinances" declared in the whole circle, from the sea by Aries to the sea beyond the Gemini, and from (*nahar*) the flood they meet by Zidon, round to the shores of the same, the "going out" (Deut. xxxiii., 18), whence sails the ship that bears all the best hopes of the world. The "waters above the heavens," in the Psalms (cxlviii., 4) are, probably, upon the sphere, and the "heavens of the heavens" (here and in Ps. lxviii., 33) are the (*shamayim*) high places or signs (Cherubim) whereinto Messiah transforms himself. Above

* Ps. lxxiii., 20.

all "the things in the heavens" mentioned by St. Paul (Heb. ix., 23) whose "patterns" on earth were purified with the blood of bulls and goats, while these were to be justified by something better, are evidently the "ordinances of the heavens," whose "dominion" is to be "set in the earth." (Job xxxviii., 33.)

Thus, while astronomical enigmas mingle in the world's sacred history only in the Pentateuch, in Joshua and the Judges till the close of the story of Samson, and there disappear forever, while artificial numbers and names go on to the end, allusions to astronomical aspects occur everywhere through the whole Bible, from Job to the Apocalypse, everywhere reminding adepts in sacred study that God becomes man for purposes of manifestation, and in that manifestation is included the sloughing off of a heresy, the punishment of the wilfully perverse, and the salvation of all that imitate God in choosing excellence and ensuing it to the end.

ASAHEL ABBOTT.

THE DRUIDS.

"And the Lord shall scatter thee among all people, from the one end of the earth even unto the other, and there thou shalt serve other gods . . . and among these nations shalt thou find no ease, neither shall the sole of thy feet have rest." Deut. xxviii., 64.

"My God will cast them away, because they did not hearken unto Him, and they shall be wanderers among the nations." Hosea. ix., 17.

In the preceding article, the learning of the ancient Britons has only been incidentally mentioned; their astronomical observations, their schools and colleges which were famous in Gaul, their tribunals of justice, their prophets and their bards have been omitted that the one point might be more clearly shown, namely, that wherein they were idolators, their idolatry was *that of Israel*—the *Beth Khumri*.

The inferential proof is strong that the same can be asserted of their luxury and civilization, particularly at their earliest settlement. It is the custom to claim much for the influence of the Romans over these people whom they miscalled "barbari-

ans," but the view of the conquered nation was different; they are reported to have said that when the Romans made a *desert* they called it *peace*!

These same Romans could hardly understand the high and lofty bearing of the members of the royal "barbarian" families who were taken captives to their capital.

Tacitus said of Caractacus (Welsh, *Carra-dag*)—the king of the Welsh Silures—that when he appeared in the street in chains before Claudius, his noble appearance and his eloquent harangue so impressed the emperor that he at once ordered him to be set at liberty. Some of his words were: "If I had yielded at once without opposing you, neither would my fortune have been remarkable, nor your glory memorable; you could not have been victorious, and I had been forgotten. If now therefore you spare my life, I shall continue a perpetual example of your clemency." His father, Bran, remained seven years at Rome as hostage for his son, and there learned of Paul the religion which he took back to Wales. He took with him also, three Christian teachers, Illtid, Cyndaf and Arwystli—which is Welsh for Aristobulus—whose household, perhaps including Bran, Paul greets (Rom. xvi. 10). The 35th Triad tells us: "The three Blessed Sovereigns of Britain were: first, Bran the Blessed, who first brought in Christianity among the Cymmry from Rome; second, Llerwg the Blessed, who built the first church in Llandaff, which was the first church built in Britain, and endowed it with legal rights of country and district and judicial powers, and that of taking attestation on the faith of a Christian; third, Cadwalader the Blessed, who gave permission to all the faithful who fled from the infidel Saxons and their chiefs, to settle in their territories." ('Welsh and Ancient Britons,' by Prof. Tanner, F. R. S.)

Of Claudia, the daughter of Caractacus (probably mentioned in 2 Tim. iv, 21), we have such a description from one of the Roman poets, that we are reminded of the Nazarites who are said by Jeremiah (Lam. iv, 7) to have been "purer than snow—whiter than milk—and more ruddy in body than rubies." Her appearance the Roman poet thought the more remarkable, as she was descended from the blue, or woaded people; this

coloring of the skin he seems to have mistaken for a natural peculiarity.

The history of this people covers so great a period that what is true of one time is untrue of another, and we cannot learn from Cæsar the early civilization—which belongs more particularly to this branch of the subject—of the several centuries following the entrance of the Cymmry into the country. This civilization is not only a proof of their origin, but was of such a nature, so mixed with their religion, that it was never wholly lost. Throughout their entire history it appeared in fair and vigorous blossoming whenever there were times of peace, and when these periods of rest were long continued, the abundant fruit was clearly that of the parent tree.

Taleisin, the Welsh bard, thus describes the first settlers :

"A numerous race, fierce they are said to have been,
Were they original colonists, Britain first of isles,
Natives of a country of Asia, and the country of Gaffis;
Said to have been a skilful people, but the district is unknown.
Which was mother to these children, warlike adventurers on the sea,
Clad in their long dress, who could equal them?
Their skill is celebrated ; they were the dread of Europe."

These "long dresses" appear to be one of the distinctions of the Israelites. On the Black Obelisk found in Shalmanezar's palace at Chalah, in connection with his victories there is a representation of five nations bringing him their tributes. Among them are the deputies of Jehu, tenth king of Israel. These Israelites are bearded, and have long hair, round caps on their heads, and shoes on their feet. Their under garments reach to the ankles, the outer fall in two parts to the hem of the under. The inscription is "The tribute of Jehu, the son of Khumri." Shalmanezar, was however, mistaken in calling Jehu the "son of Khumri." He was only so in being one of the Kings of Israel, to whom Omri—Khumri—had given this name.

Dr. Nicholas, in speaking of the inhabitants of Britain, says, they were "free, industrious, ingenious, spirited, with superior knowledge of the arts, working in metals, commercially enterprising, ready to welcome strangers, holding intimate communications with the continent; subsisting in small kingdoms, each under its hereditary sovereign; proving respect to women by

entitling her to the throne; and so far advanced in intellectual, religious and general culture, that the Gauls sent their sons to Britain for the more advanced education, and the country was generally populated."

If we accept as a fact that these early inhabitants were the idolatrous Israelites, we may safely claim for them at the time of their first settlement in Britain, whatever they could have learned from the nations adjoining Palestine, or from those with whom they had mercantile relations, particularly Egypt and Phœnicia. The Phœnicians were their chosen friends, especially during the dynasty of Omri; his son Ahab married Jezebel (Isabel), the daughter of Ethbaal, king of Zidon; and Ahab not only built a house for Baal, but for himself built summer and winter houses, one of them of ivory, and all, doubtlessly, rich in ornament and crowded with luxury. So adorned was his capital, that Samaria was known to the prophets as the "Crown of Pride."

The prophet Ezekiel says (ch. xxvii. 17) that Judah and the land of Israel were the merchants of Tyre, and traded in her markets, and of these people, with whom Israel was thus connected, Duncker says, "There is scarcely any side of civilization, any forms of technical art, the invention of which was not ascribed by the Greeks to the Phœnicians, especially the building of walls and fortresses, mining, the alphabet, astronomy, numbers, mathematics, navigation, together with a great variety of technical skill."

The Tyrian dye was invented and utilized by them, and Pliny mentions that the Gauls learned from them the art of tinning *culinary* vessels. I emphasize the word *culinary*, because when science enters the kitchen we infer that civilization has made great advances. For much that is ascribed to them by the Greeks, Phœnicia was greatly indebted to Egypt, and a recent writer says, "Egypt had a school of architecture and sculpture, a recorded literature, religious ceremonies, mathematics, astronomy, music, agriculture, scientific irrigation, the arts of war, ships, commerce, workers in gold, ivory, gems and glass, the appliances of luxury and the insignia of pride, ages before the

race of the Hebrews had been evolved from the fierce Semitic tribes of the desert."

Of the Raamses of Exodus, an Egyptian writer speaks most enthusiastically, thus describing the comforts of this court city of Raamses Second. He says, "Nothing can compare to it on the Theban soil. It is pleasant to live in. Its fields are full of good things, and life passes in constant plenty and abundance." After describing its fish, fruit and vegetables, he says, "Sweet is their wine for the inhabitants of Kemi." Of their traffic he continues, "Their sea ships enter the harbor, plenty and abundance are perpetual in it. He rejoices who has settled there. The common people as well as the higher classes say 'come hither.' The youths of the conqueror's city were perpetually clad in festive attire. Fine oil was on their heads of fresh curled hair. There was wine in the gardens, fine oil at the Lake Sagabi, garlands in the apple orchards. The sweet song of women resounded to the tunes of Memphis. So they sat there with joyful heart or walked about without ceasing."

Of Seti First—the second of the nineteenth dynasty—we learn that he carried his victorious arms to Mount Lebanon, and took from thence tall cedars for masts and for flag-staffs to adorn the Theban temples. ('Exodus of Israel,' by Brugsch Bey. Edited by F. H. Underwood).

The prophet Ezekiel (xxviii, 5) gives an account quite equalling this of the excesses of Tyre, the chief capital of Phenicia. He says, "By thy great wisdom and by thy traffic hast thou increased thy riches;" and in a description of what may have been their *yachts*, he proves a luxury that would be extravagant even in our day. For these vessels which combined pleasure and profit, the cedars of Lebanon furnished the masts, the oaks of Bashan the oars, the isles of Chittim produced the ivory for the benches, Egypt made the fine linen with broidered work for the sails; blue and purple coverings came from the isles of Elishah (probably Greece; Elishah was a son of Javan, and Javan is the general designation of Greece). The wise men of Tyre were the pilots, and the ancients of Gebal the calkers (ch. xxvii).

Such was the civilization of the nations with whom the

Israelites had constant intercourse, and there is no reason to suppose that they came behind them in any one particular. In addition to the charges against God's people for idolatry, it is said "they followed vanity, and became vain and went after the heathen that were round about them," (II Kings xvii, 15). And the words of the prophets following the dynasty of Omri are a constant testimony that the Israelites had almost ceased to struggle against the temptations presented on all sides. They were "broken in judgment," and the "statutes of Omri were kept." Their history were that of other nations. Learning, luxury and civilization were united with idolatry, oppression of the poor, and every form of cruelty. The highest and richest palaces looked down upon the lowest and most sordid huts. For these sins Israel lost its inheritance, and rich and poor became alike wanderers. They carried with them the memories of the past, they built monuments and left traditions in every land through which they travelled, and everywhere these monuments and traditions told the same strange story of a nation that could worship and "swear by the *Lord*," and with equal sincerity "swear by *Malcham*." (Zeph. i, 5). Malcham was Moloch, "the *king of the gods*," so called in ancient Phœnician theology. The sacrifices to this god are referred to in the last article. Israelites and Druids like the inhabitants who replaced them in Samaria "feared the Lord, and served other gods." (II Kings xvii, 33). Such a nation may well have built the palaces and judgment hall of Tara's Hill, the vitrified forts and fire towers of Scotland (Jeremiah vi, 1), the mysterious temples of Abury and Stonehenge, and raised "stone images," such as the gigantic Tolmen of the parish of Constantine in Cornwall.

Dr. Smith says that "everything within the circle of magic or, to speak more properly, within the compass of experimental philosophy, was the study of the Druids" and the Druids were the learned class of that nation that best answers to what we have every reason to consider Israel was at the time of the Assyrian captivity.

To identify Israel with the ancient Britons, and Israel's idolatrous priests with the British Druids and bards, both civilization

and idolatry must be conceded. Both Jehovah worship, and that of the heavenly host, which He created, must be admitted. Our writers must cease to deny that our ancestors bowed the knee to Baal and to Moloch. They must accept the fact that the largely quoted promises are followed closely by denunciations, and that only when repentant Israel ceases to say Baali, can the loving word of Ishi be pronounced. (Hosea ii. 16.) The Lord will make no covenant with His people until Baalim is utterly put away, in all the forms in which the worship of the creature instead of the Creator, still exists. When as a nation, they "hate the evil and love the good, and *establish judgment in the gate*, it may be that the Lord God of hosts will be gracious unto the remnant of Joseph. (Amos v. 15.)

The prophet Moses foresaw their sin, and told them that when they should call to mind the precepts he had taught them among the nations whither they would be driven, and would return unto the Lord, then should they be gathered from the utmost part of heaven and brought again into their own land. —Deut. xxx.

King Solomon prayed: "If they shall bethink themselves . . . and repent, and make supplication unto Thee in the land of them that carried them captives, saying, We have sinned and done perversely; we have committed wickedness, and so return unto thee with all their heart, . . . and pray unto thee toward their land, . . . then hear thou their prayer and their supplication in heaven, thy dwelling place, and . . . forgive thy people that have sinned against thee, . . . for they be thy people and thine inheritance, which thou broughtest forth out of Egypt, . . . for thou didst separate them from among all the people of the earth, to be thine inheritance, as thou spakest by the hand of Moses thy servant."—I. Kings viii, 47-53.

"And the Lord appeared unto Solomon . . . and said unto him: I have heard thy prayer and thy supplication that thou hast made before me; . . . if thou wilt walk before me in integrity of heart and in uprightness, to do according to all I have commanded thee, . . . I will establish the throne of thy kingdom forever, . . . but if ye turn from follow-

ing me . . . I will cut off Israel out of the land which I have given thee." . . . —I. Kings ix, 3-9.

During the prevalence of the worst idolatries some, undoubtedly, preserved their faith and retained pure Jehovah worship, but that the larger portion were idolators is as plain in God's Word as is their final restoration. From the time of the establishment of this mixed religion as the religion of the court, the Beth Omri, or Khumri, worshiped the host of heaven, and the testimony is too strong to be refuted, that the Khumric, or Cymmric priests carried their Baalim into the land whither they fled, that they might worship their gods in peace. For a time they were able to "build and to plant," and then Ezekiel's prophecy was fulfilled (vii, 25, 26): "They shall seek peace and there shall be none; mischief shall come upon mischief, and rumor upon rumor, then shall they seek a vision of the prophet, but the law shall perish from the priest and counsel from the ancients."

Having now given at least some proof that the ancient Britons were the dispersed of Israel, it is necessary to repeat the oft-told story of how they reached the green isle. I will quote from the "Transactions of the Cymmrodorion, or Metropolitan Cambrian Institute," vol. 2d: Essay on the tribes of ancient Britain. "The aboriginal inhabitants of this country never called themselves Britons, their designation was that of Cymmry, or aborigines, and by this term their descendants distinguish themselves to this day from the other inhabitants of the isle. Before this island was inhabited it was denominated Clas Merddin—the sea-girt green spot. After it was colonized by the Cymmry it was called Mel Ynys—the honey island. When it was organized into a commonwealth by Prydain, the son of Aedd Mawr, the people called it Yynys Prydain—the isle of Prydain. All proper names in the old British language have a significant import, and that of Prydain, applied to a person or country, means *abounding in beauty*, hence the Cymmry appellation Yynys Prydain—the isle abounding in beauty. By this name the island was known to the Celtic tribes upon the continent, and when the Romans conquered Gaul, Julius Cæsar heard this designating term. The Roman general easily

Latinized it into Britannia and the people into Britons. The appellations given to the Cymmry and their country were adopted by foreign historians and poets, and after traveling a long round in Roman garb assumed the form of Britain and Britons. As the modern inhabitants feel a pride in the name Britons, they generally distinguish the descendants of the old settlers or Cymmry by the names of Welsh, Cambrians, or ancient Britons, though the people of Wales never assume any other name among themselves than Cymmry."

"From the historical Triads, it seems there were no less than seven grand tribes in the island at the period of the Roman invasion, besides other roving parties. It is equally clear the first settlers were of Arabic origin, and a distinct people from Goths and Vandals. The first settlement was in the Tauric Chersonessus, and next on the western shores of the Euxine. Their numbers were considerable, their government patriarchial. Their real or symbolical leader was called Hu Gadern (Hu the Mighty).

"Hu, we are told, was a man of peace, and being surrounded by warlike tribes, determined to emigrate to a land of quiet and rest. He and his followers reached the German Ocean, which a part of them crossed and reached Britain. They did not come from Gaul as asserted, but crossed the German Ocean, or Hazy Sea, as they termed it. They landed in the North of England, and spread over many parts, and on to Wales. The other portion separated from them, turned to the left, and traveled to Amorica, the present province of Brittany in France."

The tribes—the Cymmry—who reached Britain are described as forming a commonwealth, and protecting themselves with laws and civil institutions. How long they continued to dwell alone is not stated, "but at a subsequent period," says the writer, "two large colonies of those who had settled in Gaul came over and joined these tribes." We know from the authority of the following Triad they were received in peace.

"There were three social tribes of the Isle of Prydain. The first was of the tribe of the Cymmry, who came to the Isle of Prydain under Hu the Mighty, because he would not possess a

land by fighting and pursuit, but by justice and tranquility. The second was the tribe of the Lloegrians, who came from Germany. They were descended from the primitive tribe of the Cymmry. The third were the Brython, who came from Amorica, and who were also descended from the primitive tribe of the Cymmry. They were called the three peaceful tribes, because they came by mutual consent and tranquility, and these tribes were descended from the primitive tribe of the Cymmry, and all these had the same language and the same speech."

It is difficult to know what to omit in this interesting historical essay by the Rev. Mr. Probert, but it is impossible to transcribe his entire account of the division and preparation of the island in apparent expectation of the coming of others of their nation. Another triad, quoted by him, says after all this, "three refuge-seeking tribes" soon followed. Afterwards two others, so that at the invasion of the Romans seven distinct tribes occupied Britain. To these many smaller bands were added, but the seven tribes remained separate. Their names were Cymmry (the original settlers), Lloegrwgs, Brython, Caledonians, Gwddyl, people of Galedin, Coranians, and Peithwys or Picts—all probably tribes of the Cymric nation.

We have some additional information in regard to one of these tribes, which aids in the identification of them all. The Gwddyl or Gaels were divided into two sets—the peaceful, called the Gael Albanach; and the fighting, called the Gael Fichti. The first can be traced to Nord-albin-gia, a region near the River Elbe, the ancient name of which was the Albis.

The Gael Fichti stopped a while in Gaul on their journey from Scythia, and built Pictavium, now Poitiers. A mile and a half from the town, on a height a little to the left of the road to Limoges, remains the imperishable mark of the idolatrous Israel. A huge Tolmen, called now Pierre Levée, thirteen feet long and three feet thick, supported only on one side, challenges the interest of the antiquarian. Rabelais describes it as a stone erected for the carousals of the University students!

The chief point of identification is in the word Gael, and Gad-diel or Gael means god of fortune—being a god much revered on the east side of the Jordan, where the tribes of Gad

and Reuben and the half tribe of Manasseh had their portions. On the Moabite stone Mesha says he is the son of Chemoshgad—the god of fortune—and this idolatry of Moab was too near these tribes of Israel for them to fail in experimenting upon it.

But this subject cannot be more than referred to in this article. The identifications on the lines of the wanderings are innumerable. Those of Brittany alone, where a part of the first division of the "wanderers" settled before crossing to the Isles, would fill a volume.

In the essay by Mr. Probert there is a new derivation of the word Celt. He says "Celtic writers admit that the people known as Caledonians were descended from the Cymmry, whose fathers, separating from their brethren during the period of their grand emigration toward the west, had settled in some part of Europe till war or famine" (a Triad mentions flood as a reason) "urged them to take refuge in Britain. Further, it is well ascertained that the middle of Scotland was one immense forest called Coed Celyddon. In this woody country the people were placed, and as the root of Celyddon is *cel*, denoting a shelter or shade, hence sprang Celt, Ceiltraid and Ceiltwys, all of which terms are either descriptive of the country or its inhabitants, being people of coverts or woodmen."

This derivation—if it is meant that Celyddon and Celt are from the same root—is not disproved by the quotations from Herodotus and Diodorus Siculus given by Higgins. From Herodotus he quotes that "the Celtae are the most remote inhabitants to the west of Europe, except the Cynetæ." From Diodorus Siculus: "And now it will be worth while to declare that which multitudes are altogether ignorant of. Those who inhabit the inland parts beyond Massylia and about the Alps, and on this side of the Pyrenean mountains are called Celtae; but those who inhabit below this part called Celtica, southward to the ocean and the mountain Hyrcinus and all as far as Scythia are called Gauls." But the Romans call all these people generally by one and the same name, Gauls." Also that Galates, the son of Hercules, ruled in Celtica, and from his

name the people were called Galatians, and the country Galatia, Gallia or Gaul.

In addition to the seven tribes, bands from the Celtic Gauls established themselves in the island. The Belgæ became a leading tribe. The Welsh form of Belgæ is Belgiad—one that over-runs—and these over-runners were settled in Britain several centuries before the Roman invasion, and are supposed to have been of the original Cymmry stock. We are also informed that the Peithwys, or Picts, "landed in North Britain and settled on the eastern coast of Scotland. They are mentioned in the Triads as coming over the Baltic Sea, and it seems evident that they too were of the original Cymmeric stock, though probably corrupted by staying in North Europe behind their brethren and intermixing with other tribes. Among all the arrivals the Triads only mention the Lloegrwys Brython and the people of Galedin as tribes who came over in peace, and were received by the native Cymmry as friends. A change was naturally wrought upon the peace-loving first settlers, but it is an important point to notice that most of the invaders were related to the native Cymmry and spoke dialects of the same common language.

The concluding remarks are these: "From the preceding statements" (of which I have quoted but a short portion) "we learn that the original inhabitants of Britain were a quiet, peaceable people: secondly, they were invaded twelve different times; the principal invasions being those of the Romans, Saxons, Danes and Normans; they were deprived of their territory, and their character changed, the invasion having but little effect on their language, which continues grand and energetic."

The influence of the Latin on the Welsh language is disproved, and the Welsh asserted to be the more ancient and more philosophically formed; the resemblances between the two are explained by both containing fragments of the old antediluvian language. The proof that the Britains did not derive such words from the Romans is, that in the Welsh they can be traced to their genuine roots or elementary sounds, and their ideal signification easily explained. One of the examples given is the Latin word Minister—a servant; in Welsh, Menestyr;

root, *menest*—a servant. This interesting subject of language cannot here be entered upon; the "Essay on the invasions of Britain and their effect on the inhabitants," from the same volume of the Transactions of the Society, is well worth reading, and to it those who care to pursue the subject are referred.

The researches of our societies have traced the Cymmry of the Triads back to the Tauric Chersonessus—the Crimea—and thence to Asia, and the subject has been so exhaustively treated that but few words are needed to complete the argument of this article by tracing the wanderers to the regions of Media and the surrounding countries, at the date when the last deportation of the Ten Tribes took place.

A few references to Sharon Turner's 'Anglo-Saxons' will be sufficient. He makes three points, especially important to us because his object was only to find the origin of the Anglo-Saxons and not to identify them with the Ten Tribes.

(I.) He traces the ancestry of the British to Media. (II.) He finds sufficient testimony to prove that the time of our ancestors' appearing there was about the eighth century B. C. (III.) He proves that Media was not the birthplace of the nation that appeared there at that date.

One of his quotations from Herodotus is to the effect that the first scenes of the progressive power of these people was in Asia, to the east of the Araxes; and on the Araxes, one of our writers states, is a Russian fortress bearing the name of Khumri.

The "progressive power," or westward march of the nation in separate bands, can be traced, as has been said, throughout the continent, and is a distinct and interesting part of the subject, but, like much that has been omitted, is too extensive for these articles.

Their object has been to prove, *first* that the Khumri of Britain were idolatrous Israel; *second* that the Khumric or Druidical priesthood, was the priesthood of idolatrous Israel (the Chemarim of Moloch, which word in the Targum is translated 'priests of idolatry') and third that the Khumri who traveled westward to Britain started from the location which the Khumri

reached who traveled northeast from Palestine, as captives of the King of Assyria.

It remains now only to sketch the dynasty from which they took the name of Khumri.

E. BEDELL BENJAMIN.

USES OF THE GREAT PYRAMID.

The many able advocates of the mathematical and astronomical uses of the Great Pyramid, including its metrological and chronological uses, almost totally ignore the idea that it was built for the same inferior and commonplace uses as the other pyramids, as much exceeding them in these functions as it exceeds them in size, and that therein, more than in anything else, it was intended to subserve the highest and holiest of objects, that of representing the Christ and his Kingdom. They appear to overlook the fact that in everything true to Nature, like form indicates like function; and therein they lose sight of the fact that, in order to symbolize the incarnate Son of God, the Great Pyramid must symbolize humanity in its lowliest and most utilitarian aspect, and that in no other way than in that of representing the very Servant of servants can the Pyramid of pyramids represent mankind recreated into the image and likeness of its great Exemplar.

Having presented what seem to me very good reasons for believing that the primary uses of the Great Pyramid were those of a military defence or treasure-stronghold, ending with its conversion into a sacred shrine or monumental tomb, and that in these inferior uses it symbolized the Christ in his assumption of the contest of human nature with the powers of darkness, in his offer of himself as a refuge from sin and death, in his guardianship of the treasures of wisdom and knowledge committed to his care by his Heavenly Father, and in his victory over death and the grave for those who sleep in his embrace, I now proceed to answer my venturesome question in regard to its Treas-

contrasted the meagre treasures of the Israelites with his own superabundant treasures, which were soon to become "all the treasures of Egypt," and to require a much larger and more impregnable stronghold for their accommodation and defence than the one that Joseph began with.

To remove any doubt in regard to "stuff" and "goods" having been equivalent names for at least an important part of the treasures in the strongholds of the Old and New Testaments, let us glance briefly at some of the texts in which they are referred to. In Exodus xxii, 7, 8, we read: "If a man shall deliver unto his neighbor money or stuff to keep, and it be stolen out of the man's house, if the thief be found, let him pay double. If the thief be not found, then the master of the house shall be brought unto the judges, to see whether he hath put his hand unto his neighbor's goods." The treasures in this case are called "money," "stuff," and "goods;" and that the "house" in which they were deposited was not a dwelling, but a store-house, or treasure-stronghold, we may see by comparison with Gen. xlvii, 14, and 2 Kings, xx, 13. Also, in 1 Sam. xxx, 24, David is reported as saying to the men of Belial in his army, who wished to appropriate to themselves and their fellow raiders all the spoil taken from the Amalekites, "As his share is that goeth down to the battle, so shall his share be that tarrieth by the stuff: they shall share alike;" and it is added that David "made it a statute and an ordinance for Israel unto this day." Here we see that the depository of the "stuff" was a fortification, requiring to be defended by a garrison, and that it occupied a commanding position, from which the aggressives went "*down* to the battle."

A treasure-stronghold very like a pyramid is evidently alluded to as the depository of "stuff" in this passage in Ezekiel: "Then shalt thou bring forth thy stuff by day, as stuff for removing; and thou shalt go forth at even in their sight, as they that go forth into captivity. Dig thou through the wall in their sight, and carry out thereby" (xii, 4, 5). Jehovah calls himself "a strong tower," and his people his "peculiar treasure;" and here, under the symbol of a mastaba being digged through by a thief, and of the treasures being carried out by the breach,

he represents himself as no longer an impregnable defense of his people; and represents his people, because they are "a rebellious house," as being taken from his guardianship and carried captive into Babylon. The digging through by a thief makes it a parallel passage with this in Matthew: "But this ye know, that if the master of the house had known in what watch the thief was coming, he would have watched, and would not have suffered his house to be digged through" (xxiv, 43). Of similar import is this in Mat. xii, 29: "Or how can one enter into the house of the strong man, and spoil his goods, except he first bind the strong man? and then he will spoil his house."

One other passage in regard to "stuff" will suffice to show that it was of two kinds, like those given by Joseph to his brother Benjamin; and that these diminished just so much the treasures in his treasury. Jehovah said to Joshua concerning the deficit in the treasures devoted to "the treasury of the house of Jehovah" from the spoils of Jericho: "Israel hath sinned, and they have also transgressed my covenant which I commanded them; for they have even taken of the devoted thing, and have also stolen, and have dissembled also, and they have put it even among their own stuff" (Josh. vii, 11). What had been done by Achan, of the tribe of Judah, was imputed to all Israel, and the particular things which he had stolen were "a goodly Babylonish garment and two hundred shekels of silver and a wedge of gold of fifty shekels"—to a Jew a very tempting part of the spoils of Jericho, all of which Joshua had "consecrated to the treasury of Jehovah." Both Achan and all Israel are said by the old version to have "taken of the accursed thing"—a mistake very like that which makes Joseph say, with evident pride of ancestry and assurance of Pharaonic favor to his family on account thereof, that "every shepherd is an abomination to the Egyptians." But the R. V. substitutes "devoted thing" for "accursed thing," and perhaps a future revision will substitute "a favorite," or something of that sort, for "an abomination." That no mysterious "curse" attached to what Achan had taken, like that of a garment infected with the plague, but that his crime was profanation, is evident also from Joshua's paternal appeal to his reverence for the triune

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and five charges of raiment." (Gen. xlv, 22.) It is not said that the "three hundred pieces of silver," and the "five changes of raiment," had relation to the triangular sides, and to the pentagonal structure of the treasury from which they were taken, but the correspondence between internal and external in nature renders the association of ideas worthy of respectful consideration. Neither is it said that Joseph took the silver and the garments from two distinct departments of the treasury over which he presided, corresponding with the king's and queen's chambers of the Great Treasury that was to replace the old one, but many analogous facts and concurrent circumstances can be adduced to show the probability of his having done so. He also sent to his father "ten (he) asses laden with the good things of Egypt," (probably changes of raiment for himself, for his grandchildren, and for his servants), "and ten she-asses laden with corn and bread and victuals for his father" (probably including his father's entire retinue) "by the way." The "goods," or "good things of Egypt," must have been the sort of treasures of which the Pharaoh had commanded, "Also regard not your stuff, for the good of all the land of Egypt is yours." Abram's treasures, including the golden ring and bracelets sent by him to the daughter of Bethuel by the hand of his steward, are in the O. V. called "goods," and in the R. V. "goodly things."

The word "stuff," in modern parlance, generally means worthless trash, comparatively so even when applied, in allusion to its derivation, to the "stuffing," filling, or contents of a receptacle; but let the reader, with the help of his concordance, follow up the Bible meaning of the word "stuff," and he will find that it is another word for "goods," meaning dry-goods, mostly ready-made clothing, in extremely intimate association with jewels and the precious metals, as the contents of treasure-strongholds. "Also regard not your stuff, for the good of all the land of Egypt is yours," might better be rendered, "Be not sparing of your goods, for the goods of all the land of Egypt are yours." In this authoritative welcome, which was evidently intended to relieve Joseph from any possible feeling of nepotism in the gratification of his desires, the large-hearted Pharaoh

contrasted the meagre treasures of the Israelites with his own superabundant treasures, which were soon to become "all the treasures of Egypt," and to require a much larger and more impregnable stronghold for their accommodation and defence than the one that Joseph began with.

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he represents himself as no longer an impregnable defense of his people; and represents his people, because they are "a rebellious house," as being taken from his guardianship and carried captive into Babylon. The digging through by a thief makes it a parallel passage with this in Matthew: "But this ye know, that if the master of the house had known in what watch the thief was coming, he would have watched, and would not have suffered his house to be digged through" (xxiv, 43). Of similar import is this in Mat. xii, 29: "Or how can one enter into the house of the strong man, and spoil his goods, except he first bind the strong man? and then he will spoil his house."

One other passage in regard to "stuff" will suffice to show that it was of two kinds, like those given by Joseph to his brother Benjamin; and that these diminished just so much the treasures in his treasury. Jehovah said to Joshua concerning the deficit in the treasures devoted to "the treasury of the house of Jehovah" from the spoils of Jericho: "Israel hath sinned, and they have also transgressed my covenant which I commanded them; for they have even taken of the devoted thing, and have also stolen, and have dissembled also, and they have put it even among their own stuff" (Josh. vii, 11). What had been done by Achan, of the tribe of Judah, was imputed to all Israel, and the particular things which he had stolen were "a goodly Babylonish garment and two hundred shekels of silver and a wedge of gold of fifty shekels"—to a Jew a very tempting part of the spoils of Jericho, all of which Joshua had "consecrated to the treasury of Jehovah." Both Achan and all Israel are said by the old version to have "taken of the accursed thing"—a mistake very like that which makes Joseph say, with evident pride of ancestry and assurance of Pharaonic favor to his family on account thereof, that "every shepherd is an abomination to the Egyptians." But the R. V. substitutes "devoted thing" for "accursed thing," and perhaps a future revision will substitute "a favorite," or something of that sort, for "an abomination." That no mysterious "curse" attached to what Achan had taken, like that of a garment infected with the plague, but that his crime was profanation, is evident also from Joshua's paternal appeal to his reverence for the triune

Jehovah: "My son, give, I pray thee, glory to the Jehovah Gods of Israel, and tell me now what thou hast done." Achan's confession was that of a devout penitent: "Indeed I have sinned against the Jehovah Gods of Israel. When I saw among the spoils a goodly Babylonish garment, and two hundred shekels of silver, and a wedge of gold of fifty shekels' weight, then I coveted them, and took them; and, behold, they are hid in the earth in the midst of my tent, and the silver under it." It is said of Jericho, as I understand it, that the Israelites "utterly destroyed all that was in the city, with the edge of the sword," and "burnt the citadel with fire, and all that was therein; only the silver, and the gold, and the vessels of brass and of iron, they put into the treasury of the house of Jehovah." This would have included the precious treasures stolen by Achan had not the theft 'profaned them, thus devoting them to destruction. All were taken from the treasure-stronghold of Jericho; and Joshua's statement that they were "consecrated to Jehovah," and were to "come into the treasury of Jehovah," shows clearly that there was no such antagonism in the Hebrew theocracy to things Babylonian and Phœnician as many good people now-a-days imagine. The treasures of temples consecrated to Bel and Ishtar, or to Baal and Ash-toreth (deities of which there is no mention in the Bible previous to the exodus), might be transferred to temples consecrated to Jehovah. It was very fitting, therefore, that the compliment should have been frequently returned. In the case of Nebuchadnezzar, king of Babylon, "Jehovah gave Jehoiakim, king of Judah, into his hand, with part of the vessels of the house of God, which he carried into the land of Shinar, to the house of his god; and he brought the vessels into the treasure house of his god" (Danl. i, 2). After about seventy years, "Cyrus, the king, brought forth the vessels of the house of Jehovah, which Nebuchadnezzar had brought forth out of Jerusalem, and had put in the house of his gods; even these did Cyrus, King of Persia, bring forth by the hand of Mithredath, the treasurer, and numbered them unto Sheshbazzar, the prince of Judah" (Ezra i, 7, 8).

So we see that "the treasures of the house of Jehovah" were

of the same kind as Nebuchadnezzar's treasures of "the house of his gods," so far as the precious metals were concerned. In respect to the class of treasures to which the "goodly Babylonish garment" belonged, the "vestments" of "the priests of Baal" belonged to a place in the treasury of "the house of Baal" called "the vestry," presided over by a vestryman, as we see from 2 Kings, x, 22; and the robes of the Levitical priesthood, including the ephod, pertained to a department of Solomon's temple called "the wardrobe," which was presided over by the prophetess, who "dwelt in Jerusalem in the college," otherwise translated "*school or second part*," by which I understand the secondary or female department of "the school of the prophets." (2 Chron. xxxiv, 12.) *Apropos* of this, may we not reasonably believe that "the wardrobe" in "the temple of Jehovah in Jerusalem" corresponded to the queen's chamber in the "altar to Jehovah in the midst of the land of Egypt," and that Asenath, the wife of Joseph, was to this what "Huldah, the prophetess, the wife of Shallum," was to that?

Such a connection of Joseph and Asenath with the Great Pyramid makes the intimate association of Osiris and Isis with it at the date of its foundation surprisingly intelligible, though the conversion of those good people into these mythical divinities did not occur until one hundred and thirty years afterwards, in the conceit and under the authority of Mencheres, the king who "knew not Joseph" in his true character. On this point, so far as Isis and Osiris are concerned, we have the authority of Osborn, endorsed by that of Professor Smyth. Quoting from his favorite Egyptologist, the Professor says of Mencheres, that he was "an immense extender of the Egyptian mythological arrangements into new and mysterious ramifications—the very man, in fact, who put Mizraite idolatry into that ensnaring form and artistic condition with the woman Isis, the man Osiris, and the child Horus, the monster Typhon, Nephthys, and all the rest of his human-minded inventions, in addition to the older Apis and Mnevis bulls, and the Mendesian goat, that it became the grand national and lasting system of his country." ('Our Inheritance,' p. 519.) "The older Apis

and Mnevis bulls" were only one hundred and thirty years older than Osiris and Isis, having sprung into existence when Joseph and Asenath (who were one and inseparable, as were Adam and Eve) were innocently recognized by their contemporaries as represented in the male and female duality of the sign Taurus as the habitation of the sun, in coincidence with the vernal and autumnal equinoxes, at the date of the foundation of the Great Pyramid.

That the usual treasures in the strongholds of ancient kings and plutarchs were the precious metals in the form of sacred utensils and current money of the merchant, and rare jewels and rich fabrics in the form of robes of royalty and the priesthood, is evident from more instances in the sacred Scriptures than the reader may imagine. An example indirectly referred to in a previous article is that of the "two talents of silver and two changes of garments" given by Naaman to Elisha by the hand of Gehazi, the prophet's steward, or treasurer, and the latter's bestowal of them "in the house," "secret place," or "tower," probably the "treasury of the house of Jehovah" in the days of Elijah and Elisha, in the government of which the inspired prophet was Jehovah's vicegerent, empowered with the right of calling the treasurer to an account for his stewardship. Elisha stood in the same relation to Gehazi that Isaiah did Shebna.

Another example of the bestowal of royal robes and the precious metals in a treasure-stronghold is that of the treasures captured by Gideon from the Ishmaelites—golden earrings to the value of "a thousand and seven hundred shekels of gold, besides the crescents, and the pendants, and the purple raiment that were on the kings of Midian, and the chains that were about their camels' necks"—all of which, in the form of an ephod wrought from these materials, Gideon "put in his citadel in Ophrah." (Jud. viii, 24—27.) In this case, as in so many others, a certain word is translated "city," when good sense requires that it should be translated "citadel." Ophra was a city (Judges vi, 24), and it is nonsense to speak of Gideon putting his ephod in his city in a city, but good sense to speak of his putting it in his citadel in a city. To make toler-

able sense the translators say, "and put it in his city, *even* in Ophrah," but they confess to interpolating the word "*even*" by italicising it; and who can believe that the sacred historian, if going to specify where Gideon put his ephod, would do it in a manner so very indefinite as that of saying that he put it in his city? Moreover, Ophrah did not belong to Gideon, but the citadel therein did, by virtue of his having built it, both as a citadel and as an "altar to Jehovah," like the one built by his great ancestor "in the midst of the land of Egypt;" for the Scripture says of it, "Then Gideon built an altar there unto Jehovah, and called it JEHOVAH-SHALOM: unto this day it is yet in Ophrah of the Abi-Ezrites." On the Great "Altar to Jehovah" was an inscription which I take to have been JEHOVAH-ELOHIM. As in its symbolization of the Christ the Great Altar is often called "the Rock," so this "altar" of Gideon's, "Jehovah-Shalom" by name, is also called "this rock," and in the margin the "strong place," evidently meaning a treasure-stronghold, or step-pyramid; and it is said of "Jerub-Baal, who is Gideon," that he built an altar of sacrifice upon the top of it, on which, with the wooden Ashera he cut down for the fire, he offered to Jehovah his father's young bullock, a symbol of Baal, after having thrown down his father's altar to Baal, on which the bullock was intended to be sacrificed.

Thus we see that the place in which Gideon deposited his ephod was a structure similar to the Great Pyramid of Jeezeh. It was also similar to those great pyramidal altars to the hosts of heaven called "matzabas," the ruins of which are still visible in the valley of the Euphrates, on the tops of which were altars of sacrifice, like those that crowned the teocallis of ancient America, aspiring to the sun in perpetual flames kindled by his rays; and on no other principle than that of kinship to the sabaism to which the matzabs were devoted by the "astrologers and soothsayers" of Chaldea, and to which the mastabas were devoted by the "magicians and wise men" of Egypt, can we account for the marvellous circumstance that the ephod bestowed by Gideon in his Great Altar to Jehovah of Hosts (or "of Sabaoth") became perverted from its use as a medium through which to "enquire of Jehovah" (as in I

Sam., xxx, 7, 8) into a medium through which to enquire of Baal and Ashtoreth, in the auguries of sun, moon and stars, and thus "became a snare to Gideon and his house," and such a seductive form of idolatry that "all Israel went a lusting after it."

Gideon's "citadel" being "an altar," and therewith being "built either altar-wise or battlement-wise," like the Great Pyramid, the idolatry that attached to his ephod therein is likely to have happened similarly to that which attached to the diorite statue in the queen's chamber; for "Gideon and his house," besides being partly Shechemite, were Manassites, of "the house of Joseph," and their specially strong propensity to side with the Shechemites in the worship of deified Joseph and Asenath, under the names of Baal and Ashtoreth, is easily accounted for. They worshiped the graven images of gods well beloved and comprehensible to them, "saying to a stock, 'Thou art my father,' and to a stone, 'Thou hast brought me forth.'" (Jer. ii., 27.)

Now, by analogy with Elisha's "tower," with Gideon's "citadel," with Joshua's "treasury of the house of Jehovah," with Solomon's "temple to Jehovah in Jerusalem," and with Nebuchadnezzar's "temple of his gods in Babylon," it is reasonable to believe that the first Jehovah worshiper's "altar to Jehovah in the midst of the land of Egypt" was a treasure-stronghold, in which the most precious of all treasures have been safely kept until this day. Also, by analogy with the two kinds of representative treasures, the precious metals and goodly garments, in the treasure-strongholds that have been referred to, it is evident that the granite king's chamber was the receptacle of the sort of treasures that are tried and purified by fire, under the presidency of the fiery sun, as it were; and that the fossiliferous queen's chamber was the receptacle of the sort of treasures that are crystallized and purified by water, as it were, under the presidency of the watery moon. The prophet Isaiah evidently alludes to such treasures when he says, "Through wisdom is the earth established, and by knowledge are the heavens declared." (Isa. xli.)

understanding and knowledge are spiritual ; and of the spiritual treasures represented by the literal, the great Teacher says to his disciples, " Therefore every scribe that hath been instructed into the kingdom of heaven, is like unto a man that is a householder, who bringeth forth out of his treasure things new and old." (Mat. xiii., 52.) Also, by analogy of the superintendence and supervision of prophets and prophetesses over the two kinds of treasures in " the treasury or the house of Jehovah," it is reasonable to believe that Joseph and Asenath were not only treasurer of the " gold and silver utensils" and " keeper of the wardrobe," in the hallowed uses of the king's and queen's chambers, but stood in relation to these sacred interiors of the " altar to Jeovoh" in the far higher character of prophet and prophetess. That Joseph was in reality a prophet, a sort of archetype of the prophet Daniel, is evident from his prophetic dream of his rulership in Egypt and the obeisance of his brothers, under the symbol of eleven of the zodiacal constellations bowing down to the twelfth, as also in his prophetic interpretations of the dreams of the chief baker, the chief butler and the Pharaoh. From these instances, supported by concurrent circumstances, we may reasonably believe that he was the prophet of the Great Pyramid, and that the prophetic teachings of this " Ancient of Days," this " Rock of Ages," this " Memorial to all generations," constitute a wonderful counterpart to those of the Bible.

One of the things foreseen by the inspired builder of the Great Pyramid is likely to have been Akiba's theft of time between the Pyramid's foundation and the birth of the Christ, to make the Jews wait the latter event about fifteen hundred years longer ; and this length of time, if I mistake not, he represented in the number of inches from the north end of the grand gallery to the entrance into the queen's chamber, the passage and chamber which the Great Pyramid chronologists suppose to represent the course and destiny of the conservative, Levitical, jewel-and-old-clo'-loving house of Judah. In respect to Asenath, who I suppose to have presided over this chamber as " keeper of the wardrobe," it is something in favor of her having been endowed with the spirit of prophecy that she was

"the daughter of Potipherah, priest of On," and that the Pharaoh bestowed her upon Joseph as a helpmeet for him immediately after his prophecy of the seven years of superabundance, to be followed by the seven years of famine, in the cereal provision for which the Egyptian mythology makes both Isis and Osiris play the part of divine benefactors. Is it not, therefore, reasonable, to say the least of it, to believe that the prophet and prophetess of the "altar to Jehovah in the midst of the land of Egypt" were Joseph and Asenath, the one the keeper of the sacred utensils of gold and silver, and the other "the keeper of the wardrobe," belonging respectively to the chambers called the king's and queen's?

Does anyone say that such distinct and definite uses of the treasure-strongholds of the ancients may be recognized in the Old Testament, but not in the New, and may be pertinent to the Mosaic dispensation, but not to the Christian? Then let me convince him how mistaken he may be. It was under the figure of a treasure-stronghold, like the Great Pyramid, which represents both earth and heaven, that the Christ said to his disciples: "Lay not up for yourselves treasures upon the earth, where moth and rust consume, and where thieves dig through and steal; but lay up for yourselves treasures in heaven, where neither moth nor rust doth consume, and where thieves do not dig through and steal: for where thy treasure is, there will thy heart be also" (Mat. vi, 19, 20). The treasures consumed by "moths" must needs have been garments, and the treasures consumed by "rust" must needs have been metals, in the cavernous recesses of such a mountain-like structure as the Great Pyramid, without those counteracting conditions in which the builder of this has so wisely provided against such causes of consumption; and such a mountain-like structure must have been the sort of treasury that thieves had to "dig through" in order to possess themselves of the treasures therein. Such a "digging through" was that of the Caliph Al-Mamoun more than eight hundred years after Christ, in quest of the marvellous treasures reported to have been concealed in the Great Pyramid by a famous magician more than two thousand years before Christ.

Still another New Testament illustration is this in the Epistle of St. James: "Go to now, ye rich; weep and howl for the miseries that are coming upon you. Your riches are corrupted, and your garments are moth-eaten" (v. 1, 2). Under the like figure of speech, the Christ, under the symbol of "one like unto the Son of Man, clothed with a garment white as snow down to the foot," clothes the teaching of the spirit to the churches, where he says: "I counsel thee to buy of me gold refined by fire, that thou mayest become rich; and white garments, that thou mayest clothe thyself, and that the shame of thy nakedness be not made manifest" (Rev. iii, 18).

In these New Testament allusions to the two kinds of treasures in the strongholds of the ancients, it is easy to see that they had either a good or a bad significance, according to the use made of them. The question therefore is: Were the treasures of the Great Pyramid like those of which the Christ said: "Lay not up for yourselves treasures upon the earth?" or were they like those of which he said: "Lay up for yourselves treasures in heaven?" Believers in the divine inspiration embodied in the Great Pyramid's most modern stage of mathematical and astronomical development, and in its prophetic chronology and symbolization of the Christ and his Kingdom, are predisposed to believe that its treasures were those of heaven, and hence those of the heaven on earth that had been, and those of the heaven on earth that is to be. When they shall have fully come to this conclusion, in both head and heart, they will as freely confess "the Pyramid religion," when accused of it, as they confess "the religion of the cross," regarding them as one and inseparable, and knowing full well that these symbolic terms will lead no honest and intelligent person to accuse them of "worshiping wood and stone."

J. W. REDFIELD.

WHO WERE THE PICTS?

The object of this little paper is to show that the Picts of Scotland were a Germanic race, of Norwegian descent. And it is hoped that either the merits or defects of the arguments here gleaned from various sources, and here very briefly stated, may provoke discussion on this branch of antiquarian research, with a view to showing the connection of the Picts with the Sacca-suni, sons of Sacca (I-saac?).

The many facts showing relationship between the Cymric and Pictish race is, for the present, withheld, to avoid confusion.

The word "Pict" *seems* to be derived from the Latin root, signifying to paint, in allusion to the supposed custom obtaining among the Picts of painting the body, but this derivation is (to say the least) questionable, as it is quite as likely to have been derived from the Welsh "Peith" or "Pith," signifying "to scream," or what is still more probable, it has been derived from the word "Pik," a corruption of the Norwegian "vik," (easily recognized in the Norse viking) and pointing to the connection between the province of Pitea in Sweden and the Pictish race. The Roman name, the "*vectoriones*," appears to come from the Icelandic "vick-verior," equivalent to Pehtar or Picts. The Anglo-Saxon name was "Pihtah" or "Peotah." The Norse "Pétland" (*terra petorum*).

We have various spellings of the name in Welsh and Gaelic, as "Pict," "Phicti," "Peithi," "Peith-wyr," "Pictdich," (a plunderer*) and "Ffichti." The Roman word, "*vectoriones*," is also supposed to be derived from the Gaelic "Uachtarich," (the inhabitants of the cleared countries).

In Pinkerton's 'Essay on Scottish Poetry,' published in 1786, the writer argued that the Lowland Scotch were descendants of the Caledonians or Picts, a Gothic race who were Scythians from Norway, and who peopled Caledonia long before the in-

* To pick and steal. See Anglican catechism.

vasion of the Romans; and Dr. Jameson then brought out his dictionary, which abundantly proved the common origin of the Icelandic and Scottish tongues.

Pinkerton contends that painting the body was *Gothic* and not *Celtic* custom.

Pinkerton, in his 'Inquiry into the History of Scotland, preceding 1056,' has elaborately proven his contention as to the Gothic origin of the Pictish race, *via* Scandinavia, the ancient Scythia.

The word "vickverior," from which the Roman name *Vecturiones* is said to have been derived, very suggestively appears to imply that the owners of it were a race of wanderers; and this origin pointing, as it dimly does, to the connection of the Picts with "the dispersed" of the Bible, is strongly corroborated by the derivation of the word "Scot" (the ally and companion of the Pict). "Scotica" has also been spelled "Sythica," and the Irish bards say that the Scots were of Scytho-Scandinavian origin; moreover, the historian Gildas, in a passage, states that the Romans returning out of Britain the Scots and Picts came over the Scythian valley in currachs (Romanis ad suos remeantibus emergunt certatim de curucis, quibus sunt trans Scythicam vallem evecti). The "Scythicam vallem" appears to have been the firth of Edinburgh. In a work by James Paterson of Ayr (from which the writer has derived many facts), on "The Origin of the Scots, etc.," he says that the etymology of "Scot" has been derived from *scinte* or *squit*, a Gaelic word, signifying "scattered" or "wanderers." The significance of this derivation is apparent?

Bede, one of the earliest of our historians, brings the Picts from Scythia, and, according to Greek authority, a diminished body of the Cimbri or Cimmerians of Asia Minor were in Holstein (or Scythia) early in the Christian era (first century).

According to Norwegian history, the Northmen are of Scythian origin, and supposed to have settled on the Euxine about two thousand years (?) before the Christian era. Although this fixes the origin at too remote a period, it is a very strong proof of the belief of the people as to the place from whence they came, the place to which the exiled Jews, or rather, Israel-

ites, went, and which the historian Rawlinson compared to "a great pot boiling over with successive invading hordes of people."

While on this point it is interesting to observe that the introduction to the 'Anglo-Saxon Chronicle,' of King Alfred, speaks of the early inhabitants of Britain as having come from Armenia.

The connection between Norway and Scotland may also be shown from the names of places, thus scone in Scotland has a resemblance to Skon-land in Norway, so hope (Scot), hoop (Norway); almond (Scotch), almand (Norway); weoms (Scotch), wyn (Norway), etc.

In Scotland strange towers or castles of a conical shape, built of stone without cement, may be found chiefly in the Shetland Isles, the Orkneys, Ross, Inverness and Aberdeen, etc. Not less than sixty-five of these are in Sutherland alone. In Caithness we have similar remains, and also later towers with Scandinavian names, as Freswick, Aldwick, Boorve, etc. One, Guernigo, is supposed to derive its name from the Carnavii, a tribe who inhabited a part of Caithness in the time of Ptolemy, and part of the same tribe dwelt in Cornwall, thus very singularly holding both ends of the kingdom. To resume, the building of these ancient towers is always attributed to the Picts, and similar remains of stone buildings are to be found in Norway.

Claudian speaks of the Orkneys as the abode of the Saxons, and Thule by the Picts. "Maduerunt Saxone fuso Orcades; incaluit Pictorum Sanguine Thule." By Saxons, Claudian meant Northmen; and Richard of Cirencester mentions the arrival of a colony of Picts from the Orkneys in the reign of Hadrian.

The *Catini* of Caithness, as related by Ptolemy, the ancient geographer, have a tradition that they came from Germany. No doubt they were of the Gothic stock of the Normen.

An almost incontestable proof of the identity of the Picts and Norwegians is this, that when the Danes overran the kingdom, A. D. 870, the Picts sought aid from the Northmen; and we have on record the expeditions fitted out by Sigurd of Nor-

way, and Thorstein the Red, Harold Harfager, etc., for the re-establishment of the Picts in Scotland.

The Shetland and Orkney Islands had the *udal* tenure of Norway, contrary to the feudal customs obtaining in other countries.

Further arguments of the identity of these peoples can be adduced from the character of the music, the names of the kings* and from the analogy of the languages, which cannot be disputed. Many of the Scotch clans are of Teutonic descent: McIntosh, McKay, McPherson, Davidson, McLeod, Gunn, Gillander, McHeamish, Robson, Henderson, Wilson, etc.

The historian societies concluded (rightly, no doubt) that the Caledonians, from their size and complexion, were Germans. And the Edinburgh Review, in 1803, came to the conclusion that the inhabitants of Britain in the time of Cæsar were German Gauls. The very word "Caledonia" (Gael-doch in Celtic) aids this derivation.

We shall not speak at present of the connection between the Picts and Cymri (but there are many interesting facts on that head). We hope this little paper may be the means of eliciting comment and further information on this interesting question.

G. M. C.

WHAT IS THE TRUE DISTANCE OF THE SUN?

In the September number of the INTERNATIONAL STANDARD I notice a quotation from a little pamphlet of mine on the "Intimate Connection Between Gravitation and the Solar Parallax." That quotation embodies "an important feature in the motions of the planets, hitherto unknown and unsuspected," which is expressed as follows: "The orbit velocity of each planet per second in miles, multiplied by the time in seconds which a ray of light takes to pass from the sun to that planet, is directly as the square root of that planet's distance from the sun in miles."

* Many Norwegian kings lie buried at Icolm-kill, the "Holy Isle."

Appended to this is the editorial remark, "now the first essential is to have the distance of a body from the sun for the purpose of determining the orbit, and without the correct distance we have no correct orbit; hence we have no means of obtaining the orbit velocity." The legitimate inference from the pre-

ceding remark is that the given equation $\sqrt{a} = \frac{2 \pi a}{c} \cdot \frac{a}{t}$

is insufficient to determine the planet's mean distance and orbit velocity. In brief, we can put the equation as $\sqrt{a} = b \cdot t$ in which (b) denotes the orbit velocity, and (t) the time for light (=l) to pass from the sun to the planet, giving the velocity of light as 186,360 miles per second as per Michelson, (a) then is the planet's mean distance, and as we have, in each case, the value of (c) = the planet's sidereal period in seconds, we have (l) and (c) given in the above equation to find (a), for $\frac{c}{2 \pi} = a^{1.5}$

$$\text{and (b)} = \frac{2 \pi a}{c}$$

$$\text{and (l)} = b \sqrt{a}$$

Calculating the distance of each planet separately by the above formula, we obtain distances strictly accordant with Kepler's third law, which makes the squares of the periodic times proportional to the cubes of the mean distances; from which distances the parallax of the sun comes out 8.54223", and the earth's distance (the mean) as 95,687,700 miles and the aberration of light as 21.088"* which is in excess of the observed aberration 20.5";

* The exact amount of the constant of aberration, as now received (it might be more properly said, as now adjusted to the received mean distance of the earth), is 20.445", to which Strane has added a correction = + 0.043"; but to exhibit an exact correspondence between this corrected value and that determined by the theory, requires, amongst many other things, an exact knowledge of the velocity of light, from which to get the exact mean distance of the earth from the above equation. A few years ago these were taken by Sir John Herschel at 192,000 per second and 95,233,000 miles, giving an aberration of 20.5". In the Unseen Universe the velocity of light is taken at 188,000 miles per second; by Foucault at 185,000, and by Professor Michelson at 186,360, which last we have herein adopted. Then the question arises: May not the ethereal medium be retrograde outside of Neptune, seeing how sluggish is the motion of that planet (only 3 1/2 miles per second) as compared with Mercury's 30.6 miles? It is in view of the delicate and intricate questions involved that we must content ourselves here with stating that a ray of light, passing through a medium moving in the same direction as the earth, takes from the earth's relative orbit velocity the certain amount of motion which diminishes the observed constant of aberration.

but the discrepancy is more apparent than real ; for if we allow for the easterly drift of the observed ray the true angle of aberration will be *apparently* diminished by virtually increasing the velocity of light with a corresponding decrease of the orbit velocity of the earth.

It is well known that for half a century preceding 1870 the mean distance of the earth as derived from the transits of Venus in 1761 and 1769 was recognized as 95,333,000 miles, differing from the figures of the theory by about its one three-hundredth part. The values now in fashion are considerably less, not however obtained from the solar parallax but from analytical investigations which seem to require a closer proximity to the sun. As this question of parallax has been admitted into the columns of the INTERNATIONAL STANDARD, in consequence of a well grounded hope that the Great Pyramid will (as I believe) sooner or latter solve the problem, I feel that I am not trespassing in adding a few remarks in advocacy of a theory which may exhibit a knowledge of the true earth distance in a very different light to that in which it is usually regarded.

If the Great Pyramid contains within its massive walls the radius of the earth's orbit, we are constrained to admit, either that its architect was supplied with better instruments than science can now boast of possessing, as well as being expert, not only in the use of such instruments, but in the whole theory of practical astronomy (which is exceedingly difficult to admit), or, he was directly inspired by a revelation from heaven with a knowledge of such facts, against which view I, for one, with the deepest reverence for sacred things, would protest, as it would commit omniscience to facts and numbers which are in no department of nature unchangeably fixed. Besides, there would be the inevitable oppositions of science invalidating the plainest indications of the simplest truths. But admit that this law is a law of nature which, in a thousand instances, might have been discovered by persevering observation in antediluvian days, then the distance of the sun would be one of the easiest of problems, implying the possession of no more than ordinary acquirements, and needing no instruments to determine it. Of all the problems that physical science has dealt with, the most

refractory of all is the question, what is gravitation? Kindred to that is the preliminary one of what is matter?

We have the impact theory of Le Sage in the one case, and the ring vortex theory of Sir Wm. Thompson in the other, with various modifications to meet difficulties, but science has found it impossible to reconcile a *mechanical* theory of gravity with the conservation of energy, or with the action of a force across, apparently, void space between widely separated masses of matter; with the inexplicable difference which must subsist between mundane matter and the medium of space, if space be filled with ultra-mundane matter of imponderable nature. But other questions spring up; for in a perfectly incompressible and continuous plenum, displacement becomes impossible, and under such circumstances there could be no motions of atoms *inter se*, no motion of translation of material masses as planets or comets, and consequently no interchange of motion. But the list of such dilemmas might be indefinitely extended and the whole school of scientific authorities be arrayed on opposite sides of every occult question of physics, with endless permutations, in its efforts to dispense with a Supreme intelligence, at whose fiat nature became what it is, solely dependent on his good pleasure, and alone sustained by his guiding hand. Man is but an epitome of his maker; and the world is but an epitome of the universe. Present analogies are our safest guides to the unseen; but we prefer to indulge in Utopian dreams of perfection, when on every side we see imperfection stamped on all sublunary things.

Now it so happens that one in whose younger days, the knowledge which was so easily acquired was vastly more inaccessible, was led to form a system of the world for himself, necessarily unbiased by the teaching of others. Following the analogies everywhere observable in nature, he admitted no conclusions which were not in accordance with simple, mechanical principles. Rejecting the corpuscular theory of light, he adopted the undulatory theory in its stead. But this implied the existence of an interstellar medium infinite as space itself, compacting into one grand unit the whole material creation. But, from the start, he rejected the idea that such medium

could be ponderable, for suppose it were, then its attracting power over planetary matter must be infinite also. Let us conceive a globular mass, like our own little world, occupying a point in space, it would be surrounded by an infinite number of shells *assumed* to be of equal thickness. Now under the law of attraction the remote shell would exert the same attractive power over the central globes as the one in contact with it, and so *ad infinitum*. And any, even the smallest, portion of an infinite space is infinite also. But in an infinite space there must be inequalities of temperature and density, due to varying and changing directions in the ethereal currents, affecting the attractive forces from different sides, and on such a scale as would overwhelm the comparatively feeble attraction of the central globe, whose components would thus be liberated by a force infinitely superior. As this is not the case, neither is there the slightest evidence of the slowest change in the force of gravity upon the earth's axis which warrants the conclusion that the medium of space is not ponderable. But it does not follow that the ethereal medium is void of inertia, or is incompressible, or perfectly elastic, or incapable of offering resistance to or of receiving resistance from ponderable matter. Neither is it necessary to consider it in a state of passive inactivity. On the other hand, he regarded the great ethereal ocean as instinct with kinetic energy—the source of all other motions—sweeping everlastingly in mighty currents around a shoreless universe, except where some stellar or planetary island or group of islands presented types of what we are familiar with in this lower world.

Impressed with the idea that it was to this grand feature of the visible creation, to be received by faith in the teaching of inductive reasoning, that we must look for an explanation of the mechanical cause of gravitation, whatever may have been said or written concerning the nature of force, it invariably resolves itself into momentum, or the effect of matter in motion, and the conservation of energy arises from the indestructibility of the *inertia* of matter which motion develops. If there be in organic life, or in chemical action, apparent obstacles to the reception of such a course, a little reflection will suggest many possible ways of harmonizing what at the outset appeared in-

explicable, and then we can afford to wait until the suggestions are verified.

The tendency of the age is to vest too much on our own infallibility and to draw too hastily conclusions impugning the wisdom to which all nature testifies, and dishonoring to that book which reveals a future for the world so adverse to the teaching of science. In the work already mentioned (the 'Unseen Universe,' page 157), its authors come to the conclusion "that the available energy of the visible universe will ultimately be appropriated by the other, and we may now, perhaps, imagine that, as a separate existence itself, the visible universe will disappear, so that we shall have no huge, useless, inert masses existing in far remote ages, to remind the passer-by of a species of matter which will then have become long since out of date and functionally effete. Why should *not* the universe bury its dead out of sight?"

Now, in the theory which has elicited such rancorous abuse from those whose own theories bristle with absurdities, I have at least been consistent and limited myself to intelligible mechanical principles. The great objection of a tangential force, hostile to a planet's elliptical motions, being quashed by the necessary harmony which does and must exist between the circular motion of the ether and that of the planets at the same distance from the sun. I have shown it to be in accordance with all nature's analogies that the ether behaves like any other gaseous fluid in being compressible by force; that in its vibratory motions, as light, those motions can be increased or destroyed by interference of those very vibrations; and as those vibrations are produced by a mechanical cause, the effect must be mechanical also, susceptible of being destroyed by interference of the opposing radiations from ponderable matter. I have also argued, from well grounded premises, that the specific caloric of this ethereal medium must exceed that of all other known matter, and be the chief factor in all meteorological phenomena. And, finally, the theory shows that the planetary arrangements of the solar system emphatically endorse the mutual interference of the radiations emanating from ponderable bodies as the true explanation of the law of gravity, which

must necessarily be directly as the mass and inversely as the square of the distance.

THOS. BASSNETT.

GEOMETRY OF THE COFFIN.

As a standard measure of volume and weight, the coffin has been successfully and beautifully connected with the earth-globe, through the medium of the mean specific-gravity ratio of 5.7 water, thus showing how perfectly it fits into and completes the system of metrology wrought into the masonry of the Great Pyramid. The elaborate measures made by Mr. Flinders Petrie, valuable as they are, do not in any way invalidate Professor Smyth's theorem, nor do they settle what the true cubic contents of the coffin's interior really are, or what they were originally. But they do show that two highly gifted measurers may differ in their results for this item by several hundred cubic inches, whereas Mr. Petrie at one time considered the probable error of Mr. Piazza Smyth's result as only ± 45 cubic inches! If those contents could be certainly shown to be greatly more than 71,250 or 71,318 cubic Pyramid inches—the theoretic and actual results of Professor Smyth—there is still a possibility of a corresponding (?) increase in the density ratio, now called 5.7 nearly, but which still bends upward as the different experiments made to ascertain it are repeated from time to time. The exterior volume of the coffin, duplicating (with every mark of design) the interior contents, must also be allowed to weigh; and then there is the possibility—probability, I would say—of other diameters of the earth than the polar being *also* alluded to. For example: At page 361 of the INTERNATIONAL STANDARD, Vol. II, the Rev. H. G. Wood estimates the equatorial diameter at the longitude of the Pyramid at 41,852,626 feet. In Pyramid inches, and adding 5,152 to reduce to mean terraqueous level, this becomes 501,734,934. The mean equatorial diameter is believed to be further east than the longitude of Egypt; but supposing it is not, and taking polar axis at

500,000,000, the mean diameter of the earth (*i. e.*, the diameter of a sphere of equal volume) will be $\sqrt[3]{501,734,934^3} \times 500,000,000$ or 501,156,000. The ten-millionth of this, cubed and multiplied by $5.7 \div 10$, is 71,745.33. The above equatorial diameter by itself would give 71,992.2. Mr. Petrie's two estimates for interior contents are :

By offsets, 72,030

By calipers, 71,960

Simple mean, 71,995; weighted mean, 71,986.

This may serve to shew that the contents theory is not exhausted by a *single* reference to terrestrial measures, and that while the polar axis is certain to appear as the common radius of lineal and cubic measure, other diameters, and eminently the mean of all, cannot be far off when the grand total of the weight or mass of our planet comes into the account, as it inevitably will; for if the coffer deals at all with the solid bulk of the earth, it must have much to say about its shape as well. Such references to the magnitude, weight and shape of the earth-globe render it probable that the peculiar lineal and other relations of the coffer may be arranged with a view to the illustration of spherical measure generally. This appears to come out in the proportions of the interior especially.

Suppose it is desired to express the volume of a certain sphere in the form of a rectangular solid, or hollow vessel, this will be most suitably and elegantly done by making the three dimensions of length, breadth and depth relatively

$$\frac{3}{2}, \frac{\pi}{6} \text{ and } \frac{2}{3}$$

of the sphere's diameter. *These are the proportions of the coffer's hollow interior.*

Now, $\frac{3}{2} \times \frac{2}{3} = 1$. Therefore, the middle term, $\frac{\pi}{6}$, is the multiplier for converting spherical into cubic measure; *e. g.*, diameter $\times \frac{\pi}{6} = \text{volume}$; and diameter $\times \sqrt[3]{\frac{\pi}{6}} = \text{side of equal cube}$. Nor is it without propriety that one dimension (depth) is made = two-thirds of the sphere's diameter; because, since a sphere is two-thirds of a cylinder, the area contained in the

product of the other two dimensions (= floor-area of coffin's interior) is the area of the sphere's diametral section, as we shall have occasion again to note.

We are, for convenience, considering the coffin as purely rectangular and regular in form, devoid, too, of the ledge adapted for the reception of a sliding lid; but this feature, as well as the various irregularities of shape, requires attention in the proper place. The concavity of the sides, particularly, is important, enabling a number of different problems to be presented by the same dimension or sectional area, which could not be the case in a perfectly regular vessel. Hence the above proportions for interior of coffin, though well within the variations of the measures in two cases (breadth and depth), are not to be held as representing their mean value; still less so in the case of length, which scarcely touches the shortest recorded length;* but yet the intention to exhibit and employ these proportions is clearly discernable in the general geometrical plan.

What is the particular sphere which is thus portrayed by the interior of the coffin? It is one having diameter = 51.51648 + axial or Pyramid inches. The cubic contents of this sphere are = 71,587.5 of the same cubic inches; and Mr. Petrie derives from his measures a capacity larger than that. Yet it is not necessary that this amount should be actually contained in the coffin when it is so clearly *intimated* by its lineal measure.

Now $51.51648'' \times 100 =$ square root of Pyramid's right axial section.

$51.51648'' \times 100 =$ radius of circle of equal area to the Pyramid's base.

$51.51648'' \times 100 =$ diameter of sphere whose surface is equal to area of Pyramid's base.

$51.51648'' \times 100 \sqrt{\pi} =$ Pyramid's base side.

$51.51648'' \times 100 \div \frac{1}{2} \sqrt{\pi} =$ Pyramid's altitude

all on the footing of a base—circuit = 365.242×100 , etc., of same inches.

Then the volume of the entire Pyramid is

$$= \text{Base-side}^2 \times \frac{1}{3} \text{altitude}$$

*But see note foot of page 5.

or, in terms of base-side alone,

$$= \frac{\text{Base-side}^3 \times 2}{3\pi}$$

But as base-side = $51.51648 \times 100 \sqrt{\pi}$, we have

$$\frac{\text{Base-side}^3 \times 2}{3\pi} = \frac{2(51.51648^3) \times 1,000,000 \pi^{\frac{3}{2}}}{3\pi} =$$

$$\frac{2}{3} (51.51648^3) \times 1,000,000 \sqrt{\pi} = \text{Pyramid's volume.}$$

And since contents of coffer = $51.51648^3 \times \frac{\pi}{6}$,

$$\therefore \text{Pyramid's volume} = \frac{4,000,000 \text{ coffer's contents}}{\sqrt{\pi}}$$

$$\text{or} = \frac{2,000,000 \text{ coffer's volume}}{\sqrt{\pi}}$$

Taking, then, volume = 2 contents,

and inner length = 2 outer breadth,

*it follows that outer side area = 4 inner side area; because the volume is = outer side area \times breadth; and the contents are = inner end area \times length.

Looking now at interior, its relative dimensions are $\frac{3}{2}$, $\frac{\pi}{6}$ and $\frac{2}{3}$, or in the proportion of 9, π and 4 for length, breadth and depth.

From breadth : depth as $\pi : 4$ it results that

- (a) diagonal of end rises at the π angle of $51^\circ 51' 14.8''$.
- (b) area of end = area of a circle having depth for its diameter. (And, by preceding paragraph,* area of *outer* side = area of a circle having inner depth for *radius*.)

Now, depth is $\frac{2}{3}$ of 51.51648. A circle with diameter = 51.51648 has therefore area = $\frac{2}{3}$ of inner end, therefore = inner floor; for length is to depth as 9 : 4.

- (c) area of floor : area of side as $\pi : 4$.

Therefore area of side is = 51.51648^2 , and that again is equal to a circle with diameter = 58.13012 + or one-hundredth of the Pyramid's geometric height.

Thus all the interior areas are circular areas cognate to the Pyramid's geometric and cosmo-metric scheme as propounded by Professor Smyth, after John Taylor's original ideas of a year-day base expressed in terms of a cubit derived directly from

the rotation axis. But as yet only one of the three *exterior* areas (side) is so correlated.

Between the internal and external horizontal planes of the coffin there is this connection, that circuit of interior gives circumference of a circle whose area = area of outer base. If the two planes were *squares*, this would mean that their sides are as $\pi : 4$, after the pattern of the alternate squares shown in the Pyramid diagrams of Mr. Latimer and Lieutenant Totten. As they are not squares, nor similar figures, nor directly related in both their homologous dimensions, the object of this connection is a little obscure. It points, however, to this: The circuit within the coffin at about half depth is $209.4395 +$ (surrounding there an area of 51.51648 circle, as before referred to). But $209.4395 +$ is circumference to a diameter = 66.6 or $\frac{2}{3}$ 100 inches, and to an area of $3490.6585 +$ or $10,000 \pi \div 9$, which is therefore the area of the outer base.

According to the measures, this equation to base area would come out best in British inches; but the measures do not shew the full original size of the base.† The variations of sectional areas arising from irregularity of figure admit of either inch giving true results, at different levels. Those who prefer British inches might find it worth while to try to correlate all the coffin's measures from this basis. For example:

$$\begin{aligned} \text{Base area} &= 10,000 \pi \div 9 \\ \text{Assume length} &= 90 \\ \text{Then breadth} &= 1,000 \pi \div 81 \\ \text{Assume (length and breadth)} \div \pi &= \text{height.} \\ \text{Then height} &= \frac{90}{\pi} + \frac{1000}{81} \end{aligned}$$

and so on with alternative hypotheses.

But adhering to Pyramid inches, we may note with what ease several of the problems may be worked out from known π .

$$\begin{aligned} \text{Then } 10,000 \pi \div 9 &= \text{base area} & \text{Say } \pi &= 3.1415926535 + \\ &= 3490.658404 - \\ \text{Square root } \div \pi &= \text{rad. of equal-area circle} &= 100 \div 3 &= 33.3 \\ \text{Circumference of said circle} & \} &= \frac{2}{3} 100 \pi &= 209.43951 + \\ \text{or interior horizontal circuit} & \} \end{aligned}$$

† Mr. Petrie's lowest measures of outside were four or five inches above base; those of inside, one inch above inner floor.

[Notice in passing that $3490.658504 + 30 = 116.35528$, nearly the length of ante-chamber in *British* inches.]

The interior horizontal area being that of a circle of 51.51648 diameter, is, of course, $\frac{1}{10000}$ of the base area. (The contraction of the coffer within, towards floor, may likewise provide this equation to a lesser base than 9131.05^2 , but at mid-depth the full amount is found.) As the inner end or cross section is $\frac{1}{4}$ of the horizontal area, the former is = a square with side $\frac{91.3105}{3}$; and the outer side = 4 inner end = a square with side $\frac{2}{3} 91.3105 = 60.873 + = \text{length of great step.}$

The annexed diagram is a combined representation of the leading geometrical problems of the coffer; and its connections with the Pyramid are shown by the small pyramid ABD, erected on the same level as the vertical cross and long sections, EFGH, JKLM, the pyramid being $\frac{1}{100}$ of the height of the Great Pyramid, as per Professor Smyth. (I may note that were the small pyramid's base about .84 of an inch lower, or on the level of the adit to chamber, its sloping sides would pass through the coffer's angles K, L.)

AC, the axis, is bisected in D' and trisected in E', F',

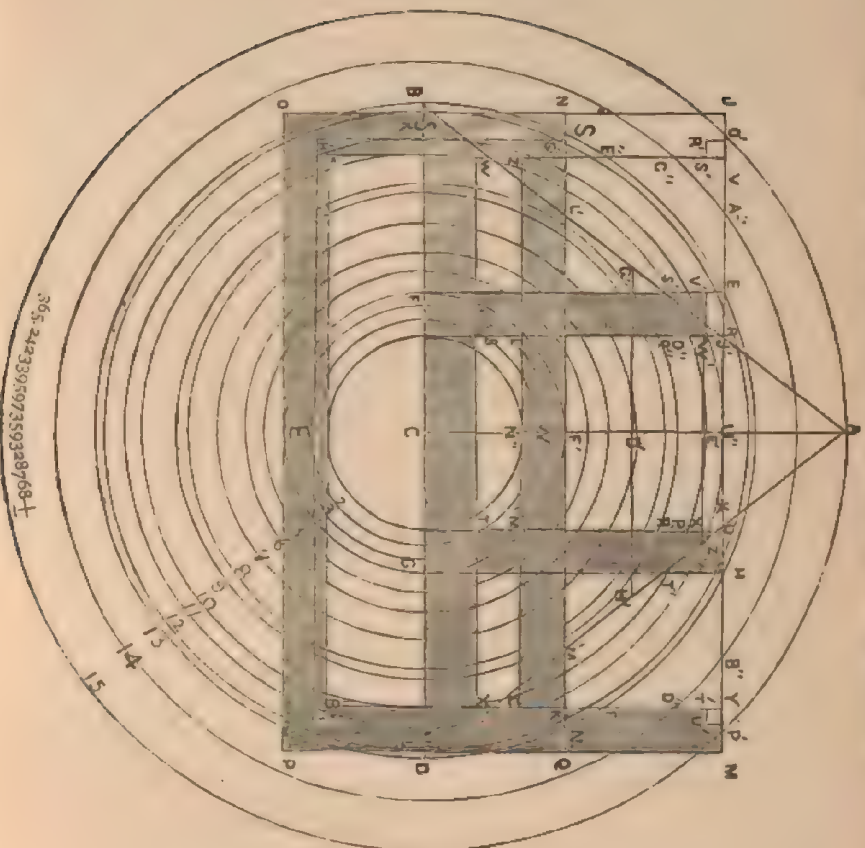
The horizontal section through D' at half height is = the floor area ZA'B'C'; the section at E' is equal to the inner end RSTU; the section at F' = the outer side JKLM.

The circles equal to these sections respectively are the 6th, 3rd and 8th, counting from the centre.

The outermost circle has circumference $365.242 + \text{Pyramid inches}$; and this circle I would view as the fundamental origin of the coffer's dimensions. It is of equal area to the four exterior vertical sides. A circle of *half* this area is figured as passing through the inner angles ZA'B'C'. Its area is the sum of the two vertical sections of the coffer, meridian and prime vertical, and is $\frac{1}{10000}$ of the sum of the two corresponding sections of the Great Pyramid itself. The radius of this circle is semi-diagonal of interior floor, and minimum height of coffer (nearly), and its circumference = circuit of base.

The diameters of the other circles shown will be found in the margin; and the theorems of which they are exponents will, I

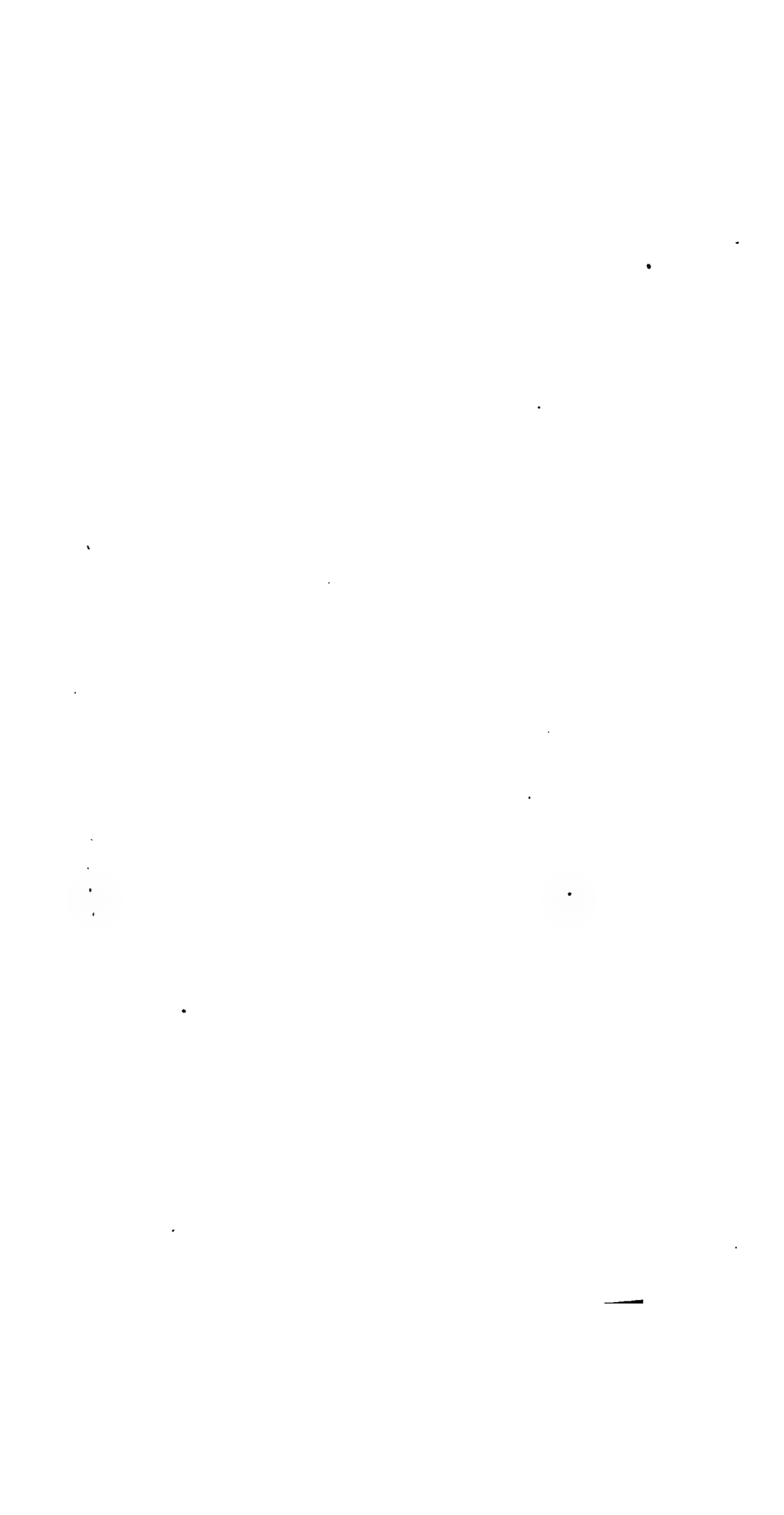
Sections of Coffin and Small Pyramid, with defining Circles. SCALE= 1.20.



Diameters of Circles.

P. I.

1. = 26.4 and 26.97397
2. = 30.43685
3. = 34.34432
4. = 38.75341
5. = 45.2 ±
6. = 51.51648
7. = 58.13012
8. = 66.6
9. = 68.68864
10. = 77.27472 and 77.50682
11. = 82.2084 and 83 ±
12. = 90. ±
13. = 91.31056
14. = 103.03296
15. = 116.25025



think, be readily traced, without being detailed here, by those who care to study the diagram. Some of the intersections of the circles with the coffin are also interesting, as in the points O'P', EH, W'X', S''T'', L''M''. The sarcophagus ledge is defined in plan approximately by the circle passing through ZA'B'C', and in elevation by that passing through A, and (approximately) by the sides AB, AD passing near R and U, Y'. Coffin's depth bisected at E''F''?

The five innermost circles are definitive of the cross sections EFGH, RSTU. The smallest, having diameter = inner breadth (minimum), has circumference equal to horizontal diagonal A'C'. The next, having diameter = $\frac{1}{8}\frac{1}{10}$ of base side, or 30.43685, has area = square of full breadth (26.97397²). Then 30.43685^2 = area of inner section RSTU, = circle No. 3 with diameter = depth = 34.34432; whose circumference is = perimeter of square of breadth 26.97397. The square of 34.34432 is again equal to circle No. 4, having diameter 38.75341 + = outer breadth. Circle No. 5 is not directly connected with the foregoing. Its diameter, say 45.2, is about half the maximum length of coffin; its area, 1605 = area of outer cross section EFGH.

Circles 6 and 7 give areas of inner floor and side; and Nos. 8 and 9, areas of outer base and side; diameters: 51.51648, 58.13012, 66.66666 and 68.68864.

Will some of your able mathematical contributors take up the theory of the coffin and systematize it as it demands?

JAS. SIMPSON.

Edinburgh, October 27, 1885.

For convenience, my computations are derived from t-year = 365.2423396—. A deduction of one, two or three millionths respectively from statements of lineal, areal or cubic measures will reduce to present year values with tolerable accuracy.

At p. 357 of the STANDARD, Vol. II, the cubit of the Turin museum is stated to be .523524 of the metre. That is $\pi \div 6$, or the same proportion that the breadth of coffin's interior has to the modulus 51.576 +. Hence a "coffin" measuring within, $\frac{2}{3} \times \frac{2}{3}$ metre \times 1 Turin cubit, would contain 1 spherical

metre. Also a π pyramid with base-side 3 Turin cubits has height = 1 metre. But in the first case the metre figures as a diameter, and in the second as a radius, whereas it is itself derived from a circumference of the earth. J. S.

THE CAMPAIGN OF MOSES.

FROM THE FRENCH OF M. LECOINTRE.

BY MRS. A. M. SEARLES.

CHAPTER IV.—ACTUAL GEOGRAPHY OF THE PRESENT.

We have given you a description of the geography of the Isthmus of Suez in Moses' time; let us see what it is in the nineteenth century, and to facilitate the description let us follow the direction of the maritime canal, which, starting from Port Said, on the Mediterranean, ends at Suez upon the Red Sea. It first crosses for a distance of about thirty-seven miles the lakes of Menzaleh and Ballah, a vast expanse of water and marsh, which extends from Damietta to Pelusium, along the sea, from which it is separated only by a narrow tongue of sand. It is here that the Mendesian, Tanitic and Pelusiac branches of the Nile begin to disappear, their mouths for a long time having been hidden by vast accumulations of slimy mud. The waters here have very little depth, and during the rise of the Nile they are of higher level than the Mediterranean, and diffuse themselves by many mouths (or boghaz), which are openings in this tongue of sand; at the period of low water this phenomenon is reversed.

In ancient times this marsh occupied a much smaller extent. The shore of the sea and the branches of the river were dammed up and the greater part of the lake formed a well-cultivated plain, which nourished a large population. In digging the canal, in many places, under from one and one-half to two feet of mud, were found fields still covered with their crops of maize or of coarse millet that the last catastrophe had suddenly submerged. The date of this event is not probably very ancient,

for Pelusium was still in existence up to the time of the crusades, and Faramah, which is near by, was, at the time of the flourishing period of Venice, the depot of the commerce of India. To-day nothing remains of it but ruins, and the surrounding plain, covered each year by the inundations of the lake, is without vegetation. About twelve miles from Port Said the canal strikes the ancient course of the Pelusiac branch, passes upon the right bank and between this and the land of Goshen.

After crossing Lake Menzaleh, the canal passes on to Kantara, a point much frequented by caravans from Syria, where there is a little water and some ruins; it continues through fertile plains, vestiges of the ancient presence of man, crosses the last lagunes of Lake Ballah, and arrives at El-Ferdane, where the land rises as far as El-Guisr, the culminating point of the isthmus upon the line of the canal. Here one no longer finds ruins, and if the country has formerly been inhabited all traces of it have disappeared.

On leaving El-Guisr, the canal enters Lake Temsah, and afterwards strikes the borders of Toussoum and the Serapeum before reaching the Bitter Lakes.

The destiny of Lake Temsah is singular enough; in ancient times it was filled by the waters of the Nile, but the canal which conducted it there being stopped up by a sand bank, it has remained dry for centuries. From time to time an extraordinary increase has brought back to it sweet waters, which soon evaporate. But the digging of the maritime canal has changed it altogether by transforming it into a salt water lake. In May, 1867, it received the waters of the Mediterranean. The city of Ismalia is built upon its northern shore. It terminates the great valley called Wadi-Toumilat, which runs toward the west, and in which was dug the celebrated canal of Pharoah, which connected the Nile and the Red Sea. After having served its purpose from the time of Ptolemy Philadelphus to the occupation of the Arabs, this canal was abandoned in the eighth century; but the remains of it are still extant and can be traced in a very good state of preservation for a great part of the line. They have been described by Le Pere in the great work upon Egypt, '*Memoirs Sur la Communication des Deux Mers*'. He cites

another canal, smaller, but more ancient; it is that which conducted the waters of the Nile to Lake Temsah, and fertilized the whole valley as far as to the Serapeum. M. de Lesseps says: "The Greek and Latin authors were not ignorant of the existence of this canal (the grand); they attributed its construction to Sesostris or Ramesis II.; Aristotle, *Meteor*, I-14; Strabo, I. and xvii; Herodotus, II.-158; Diodorus, I.-33; Pliny, H. N., -VI-29; Cf. Smith, *Dictionary of Bible*, III., p. 10-12). The inscription of Seti I. at Karnah, teaches us that in this latitude we shall find a canal running from west to east. This canal, according to the inscription, was filled with crocodiles; now the basin which terminates the valley, and at which the canal necessarily ended, may it not be the Lake Temsah of to-day? More especially as Temsah is an Arabic word signifying crocodile." (*Conf. Sur les Trav. de l'isth de Suez*, p. 16).

The canal of Seti first commences on the Tanitic branch, at the village of Fassouka, joins the Pelusiatic branch at Zagalle, and continues by Wadi-Toumilat to its end at Lake Temsah. In later times the canal has been much neglected, and has conducted the water only as far as Gassasine; from thence its traces are lost in the desert, to reappear at Bir-abou-Ballah, at the mouth of the Lake. To conduct the sweet water into the isthmus, the Suez company opened it, to leave Gassasine on a new track; at a distance of some miles from the lake it forks, one branch going to Suez, the other to Ismalia, and M. de Lesseps still hopes some day to take it to Port Said. The amount of water was naturally insufficient for these new developments, and on opening the maritime canal, the work was completed by the purchase of a water supply directly from the Nile at Cairo.

But to return to the maritime canal. After passing the Serapeum it enters the Bitter lakes. These are two great basins, of very irregular dimensions and communicating with each other. The total length is about twenty (20) miles, and the greatest width is six miles. The larger one is the deepest, but the bottom of the smaller one is, nevertheless, much below

the level of the two seas. They are limited at the south by the ridge of Chalouf, after passing which we come to a vast, level plain, abutting on the Red Sea, the waters of which sometimes overflow it. We call it the plain of Suez. The city of Suez is built toward the point of the sea, upon the borders of a lagoon, which drains to each sea; a league further on we find the roadway, at the foot of Mt. Attaka.

The land of the isthmus along the course of the canal is nearly flat, for the ridges of which we have spoken are not much more than wrinkles a little raised above the surrounding plain. The principal of these is El-Guisr, which is at the most only about sixty-five feet above sea level. A little to the north of Suez, towards Chalouf, we come to the mountain, or *gebel* of Geneffe, of which the chain runs from east to west, throwing out a ramification running north and south, which borders the Bitter Lakes. The principal hill of this branch is the one which forms the northern terminus; it is remarkable alike for its height (260 feet), and for the regularity of its form. It is called the Peak of Chebrewet.

The Red Sea of to-day occupies much less space than formerly. It has dried up, evaporated. We find in many places evident proofs of this fact: for example, at the east of Suez, on the Asiatic shore, the soil in many places is formed of agglutinized shells, which could only have been formed at the bottom of the sea; and the state of their preservation is so perfect that the emersion of this bank must be of relatively recent date. Niebuhr (1761) cites an analogous fact. He says: "I saw at a distance of three-quarters of a leagues west from Suez a mass of shells living upon a rock which was only covered at high tide, and I saw similar empty shells upon another rock on the sea shore too high for the tide to reach. Some thousands of years ago then, the Gulf of Arabia must have extended further towards the north."

Besides, this effect is not merely local; it extends much farther, for Niebuhr says again in speaking of Arabia: "The sea coast here has changed more than anywhere else. On all the coasts of Arabia one finds indications that the sea has receded. For example, Musa, which all the ancient writers speak of as being

a seaport of Arabia, is actually some leagues from the sea. We see near Loheia and Djeddah great hills of coral and shells of the same species as those we find living in the Gulf of Arabia. It is the same at Chalouf. We find a beach, pebbles and shingle. The sea still comes occasionally to wet them, but it no longer tosses them about, and it has evidently receded since the day it fashioned them.

But at a more remote period the sea came higher still, even as far up as the Serapeum, and filled the Bitter lakes ; for it has left there as witness of its presence an immense bank of salt eight miles long, four miles wide, and thirty-two feet in thickness. By the building of the maritime canal the sea has again entered these lakes and covered the bank which to-day is entirely submerged.

Prior to this submersion the basin of the lakes formed a great depression, sloping gradually on all sides. The soil was a sand more or less hard, mixed here and there with flinty pebbles, gypsum and clay. As one went towards the bottom he met a belt of blackish earth, very soft, which, owing to the deliquescent salts with which it was impregnated, and to the subterranean filtrations, always remained moist. In a few places the surface would dry up sufficiently to permit of passage. But one felt the ground tremble under foot, and one could easily thrust a flexible switch or rod into it, which, when withdrawn, would bring up a little cone of salt. Accidents there were not rare. Le Pere, president of the Egyptian commission, and a number of the employes of the Suez company came near losing their lives there. The bank of salt was raised from four and a half to six feet above the moist grounds, which it completely surrounded. Formerly, without doubt, this black moist mass occupied the bottom of the lake, and at a certain moment it must have been driven back by the pressure of this bank which by some convulsion has been thrown up onto solid ground. All these facts are incontestible and uncontradicted ; but we are ignorant of the dates at which they may have occurred. The ancients have left, it is true, accounts sufficiently numerous upon the isthmus, but they have been so diversely interpreted

that each opinion has found arguments in its favor. Let us try to determine the meaning of them.

The City of Suez is, as we have said, built upon a lagune, of which the point runs some thousands of yards to the north and forms ordinarily the terminus of the Red Sea, but in exceptional cases, when a south wind aids the equinoctial tide, the waters rise much higher and overflow the plains of Suez, which they afterward leave covered with a salt efflorescence. This plain, nearly nine miles in length, is limited at the west by a little rise of ground, the last of the lesser chain of Gebel Geneffe, and at the east by the swelling of the little foot hills of Syria, which form cliffs; and at the north by the ridge of Chalouf, which leaves Gebel Geneffe and runs to the east, diminishing in height as it advances into the plain, where it disappears before reaching the cliffs of Syria; so that if the waters still rose it would be necessary to find passage thence.

To-day, at least under ordinary circumstances, the width of the isthmus is something like seventy miles, counting from the point of the lagune at Suez to the ancient mouth of the Pelusiac. But at the time of the exceptional tides, when the waters overflow the plain of Suez as far as Chalouf, the distance between the two seas is only about sixty-three miles, and finally, when they fill the Bitter lakes and advance, even to the Serapeum, it is only about forty-six miles. But between these two periods there may or must have been an intermediate period when the waters, still without entering the lakes, escaped by the threshold of Chalouf. Then the distance also must have been intermediate, and furthermore, the line, following the one where we measured it, must have been carried back towards the east.

Now Pliny and Strabo—who wrote, the first, sixty years after, and the second, twenty years before, the commencement of our era—place upon the Asiatic shore, toward the Arabian gulf, a city of Heros, which appears to correspond with the ruins that we find on the cliffs of Syria, a little more than half the distance between Suez and Chalouf. From the lower end of the gulf upon which the city was situated, as far as Pelusium, extended, according to Strabo, (Geog. xvii.) a desert one thous-

and stadia in length. In another place he says nine hundred, but in the Chrestomathies, which are necessarily posterior, he maintains one thousand stadia.

The statement is very clear the only difficulty lying in the question of the stadium, its length not being fully understood. There must at least have been two in use. The Olympian stadium measured six hundred and seven feet, while the stadium of Samos only measured three hundred and twenty-eight feet. What is to be done in such a case?

This question of the length of the stadium has received much attention from the savans of the Egyptian commission. They studied it in all the ancient authors who have written upon the subject in Egypt, and after having measured upon the spot a great number of distances, they arrived at these three conclusions, viz:

First—The distances must have been measured directly from one point to the other, as we do on our geographical charts; the Egyptians possessed the most exact, of which the origin, according to the historians, dated back to the epoch of the great Sesostris. (See '*Memoire de Jomard sur le système métrique des anciens*,' page 722 at suivantes.

Second—Herodotus nearly always employed in Egypt the stadium of three hundred and twenty-eight feet; it is, for this reason, called the stadium of Herodotus.

Third. Strabo and Diodorus of Sicily employ sometimes the stadium of 607 feet and sometimes the one of 328 feet. They appeared, however, to copy the accounts they received without taking the trouble to define the measures employed; the same can also be said in a measure of Herodotus. See '*Description de l'Egypte*.' *Memoire sur le système métrique des anciens, par Jomard. De l'ancien état des côtes de la mer Rouge, par Rosiere (Antiquités Mémoires, T. I et II. Memoire sur la communication des deux mers, par Le Pere. Memoire sur les anciennes limites de la mer Rouge, par Dubois-Aymé. (Etat moderne, T. I.)*

For the value we employ we have an easy means of verification. We know perfectly the distances. Let us employ there successively the two stadia. We shall very readily see which fits the best.

Let us first hear the testimony of Strabo.

He speaks of a desert 1,000 stadia long, which extends from the foot of the gulf to Pelusium. Let us remark first that there is no uncertainty of the manner of measuring this length, for we have it before us in going from the gulf to Pelusium, and deviating neither to the right nor the left, consequently we must apply the measure directly and in a straight line. Now one thousand stadia of 607 feet long would be about 115 miles, which in starting from Pelusium would put us into the Red Sea about forty-six miles south of Suez; the stadium of 607 feet, then, is much too long. On the contrary, with the stadium of 328 feet we land directly upon Chalouf, which confirms what we have already said, that at a certain epoch Chalouf was at the bottom of the Gulf of Arabia; it is in reality, then, the stadium of 328 feet that Strabo has employed in this measure.

He says further that Pelusium was 20 stadia from the Mediterranean Sea; the distance between the two seas was then 1,020 stadia, say sixty-three miles.

Let us turn now to Herodotus, who lived more than four centuries before Strabo. For want of a good interpretation the accounts that he gives have confused rather than cleared up the subject.

He teaches us that, "To go from the northern sea to the southern, which is called the Red Sea, the shortest road starts from Mount Casius, which separates Egypt from Syria, which would be a distance of only one thousand stadia." (Liv. II, 158. *Traduction de nouvelle de Gignet. Hachette, 1864.*) The deduction of one is that the Red Sea stops at Suez; of the other, at the Serapeum.

The first employed the Olympian stadium of 607 feet, and starting from Mount Casius he directs his course to the Red Sea, "taking account of detours and circuits, he arrives thus near Arsinoë or Suez." But there can be no question of "detours" nor of "circuits," since Herodotus speaks of "the shortest road." Now, in marching in a straight line we arrive thirty-four miles south of Suez; the stadium of 607 feet must then be rejected. Herodotus, then, must have employed the stadium of 328 feet. Only we must employ it as he indicates, and it is

this that does not please those who try to prove that the Red Sea did not reach as far as the Serapeum.

In reality it is found to be just 1,000 small stadia from Mount Casius to the Serapeum, and they draw from this circumstance that the sea reached that far. This is an error, for the shortest distance between the two seas in this case would be from the Serapeum to the shore of the Pelusiac, forty-six miles, and not from Mount Casius to the Serapeum, sixty-three miles, as Herodotus tells us.

What he does say amounts exactly to this: "If from the point of intersection of Mount Casius with the shore as a center, we describe an arc of a circle upon the surface of the isthmus, with a radius of 1,000 small stadia, we shall strike the northern extremity of the Red Sea."

In doing this at the present day we strike directly on the desert, which shows us that in former times the Red Sea extended further into the interior than it does to-day, consequently discrepancies naturally occur in accounts that were perfectly stated.

Thus, according to Strabo, the sea reached to Chalouf, sixty-three miles from the shore of Pelusiac, and sixty-seven miles from Mount Casius; according to Herodotus it reached a little further. It must then have overflowed in the east and formed lagunes, of which the northernmost reached within sixty-two miles from Mount Casius, while the mass of water retained by the ridge rested sixty-seven miles from the Mediterranean.

The Bitter lakes, then, no longer formed a part of the Red Sea, but they were filled with salt water which was brought by Pharaoh's canal, commenced by Necos, and finished by Darius (Herod. II, 158), and which, in the condition in which Herodotus saw it, reunited directly and without locks the Nile and the Red Sea. But the Bitter Lakes at a given moment have been made a part of it. And without doubt they were in this condition during Moses' time, for the passage of the Red Sea could have taken place according to the account only in this condition.

They have been separated by the formation of the ridge of Chalouf, which some attribute to a gradual upheaval, which

after many centuries drove back the waters of the Red Sea and others to a sudden upheaval occasioned by some great terrestrial commotion.

"If we observe," says M. De Lesseps, "that the culminating point of the ridge of Chalouf is about eighteen feet above the actual mean level of the Red Sea; that the ridge is formed of deposits of sand mixed with gypseous clay even to a depth of about twelve feet, and then below that, at a height of a little more than six feet above the actual level of the sea, a rocky bank, rich in fossiliferous deposits at the surface, and of a formation much more ancient than the other lands crossed by the canal, it becomes easy to state precisely the conditions of the retrogression undergone by the Red Sea. At the epoch when the Hebrews quitted Egypt, the rock of Chalouf, the last prolongation of the hills of Geneffe must have been entirely submerged. Then by a continuation of gradual upheavals of the soil, the crown of the rock became bare, and gradually became covered, under the action of the tide and the wind, with deposits of sand, clay, etc., until it came to form a barrier between the sea and the lakes." (*Académie de sciences, seance, du 22 Juin, 1874.*)

Such is the opinion of M. De Lesseps. It appears rational, but a contrary opinion is not less so.

Really we meet in this neighborhood many different traces of violent commotions, such as the one mentioned by Le Pere in the defile of Ramlieh, situated some ten leagues distant.

Le Pere says: "This defile is embanked for about three hundred feet in the plateau which overlooks the valley. The two banks have an inclination of from forty to fifty degrees. The numerous inflections correspond so strikingly with the indentations and projections of the defile, that they seem to have been cut by the hand of man."

"This formation, it appears to us, must have been the result of the rending of the plateau by such a giving way of the valley as is generally produced by earthquakes." (*Memoire Sur la Communication des Deux Mers.*)

Besides this, the sacred history mentions a violent earthquake, suddenly occurring in the neighboring countries a little after

the passage of Moses, of which the effects may have extended this far. "*In exitu Israel de Egypto. . . . Montes exultaverunt ut arietes, et colles sicut agni ovium.*" (Ps. cxiii.)

It is very possible that the ridge of Chalouf may have been heaved up in these convulsions.

Either of these solutions is then admissible, and thus far there does not appear to have been any decisive reason either way. Neither the nature, nor the primitive formation of the country brings any argument in favor of one or the other.

Here is further information upon the level of the Red Sea at different epochs.

Le Pere, in establishing the level of the canal of Pharaoh, met in the Bitter Lakes some banks of shell fish, and remarking that they were at the actual level of the Red Sea, he concluded that at the time of the separation the level of the two must have been the same; but this conclusion is erroneous.

In reality we must notice that these shell fish are neither broken, nor scattering upon the beach. There are banks of them, and they have not been tossed or rolled thither by the action of waves, but they have lived there. They were then submerged; and since the closing of the passage to the lakes, that is to say, since 740, the sea has sunk away from the height of water it had recovered. What was that height?

We find approximate information at the crossing of the ridge of Chalouf. Pharaoh's canal presents at this point a state of preservation truly marvelous. The slopes are regular, the angles sharp, the bottom, of flinty pebbles and clay, perfectly smooth, without trace of ballasting. We should say the work had just been completed. We can even distinguish very clearly upon the steep banks, the little heaps of rubbish that the workmen brought up from the bottom of the cut at the time of the last cleaning out. All this is easily explained by a collection of local circumstances which avert all cause of destruction and renders very probable the opinion that the cove dates from the digging of Amrow, about 640. Its declivity is 58.25 feet, whilst the height of that of the Red Sea is 60.22 feet. It would not then, to-day, have more than two feet of water at mean tide, and would be always dry at low tide. As a result, the

canal would be of no service. Since at the time of the Arabs it was still in use, it had necessarily a greater draught of water. It could not have been less than nine feet at mean tide, and say from six to seven at low tide. And this is very modest for a maritime canal that Ptolemy had had dug thirty Roman feet deep, according to Pliny. The ground would then have been raised in the twelve centuries that have passed since the time of Amrow, say about seven feet; a little more than seven-one-hundredths of an inch per year; and, in admitting the same proportion, twelve and a half feet since the time of Ptolemy Philadelphus, this is evidently a minimum calculation.

This circumstance must have had a certain influence upon the relinquishment of the canal; it could no longer receive ships from the sea, and it is without doubt because of its inutility, that they have neglected to reestablish it after the war, in view of which the Caliph Al-Mausour had, about 740, caused its mouth to be closed up.

However it may be, and whichever opinion be adopted upon the mode of the formation of the ridge of Chalouf, what we have just said shows clearly that at the time of Moses it must have been deeply submerged, and that it was really the water of the sea, and not that of a lagoon, which came to bathe the feet of the Serapeum. There no longer remains, then, any foundation to the objection that M. l'Abbé Vigouroux formulates in these terms: "At the epoch of Moses the Red Sea no longer reached as far as the Bitter Lakes. I must scarcely ever have passed its actual limits. From the time that the Bitter Lakes were permanently separated from the Red Sea by the ridge of Chalouf, they could no longer have been confounded with each other; they must have borne a distinct name. In like manner, when Exodus tells us that the Israelites have crossed the Red Sea, it assures us that they have not passed by the lakes situated to the north of the ridge of Chalouf." (*'La Bible et l'Egyptologie.*)

This objection is analagous to that of P. Pugol, who said: "This reservoir, this basin, where from time to time the Sea has sent his waves, is it the sea, the great sea, the sea in all its strength? Does Moses allow the supposition even that the

miraculous passage took place toward the extreme point, there where the waves are stilled, and not at the shore of the great waters, in front of the sea in all his power." (*Etud. relig.*)

It is P. Pugol who employs the grand words, "great waters, great sea, sea in all his power," and not Moses, who simply says, "*unda, mare, aquae*," and his narrative shows clearly that the passage was made toward the extreme point, in a place where the sea was straight enough to allow the Hebrews to pass over rapidly, and deep enough to drown the Egyptians.

"THE TWO WITNESSES."

In the July number of the INTERNATIONAL STANDARD Mr. W. H. Searles has by a cloud of adverse criticism obscured the main facts that my values of minor quantities, whilst fulfilling many other conditions, are practically identical with those of Professor Piazz Smyth, and even in the floor length the difference amounts roughly to $\frac{1}{3}$ of an inch in 157 English feet, or 1 in 5,300. Then my value of the angle of inclination is larger than that indicated by the Professor's very best instrument by only 7"; in other words, the difference is only 1 in 13,525.

The method pursued in my pamphlet was to determine with the utmost precision the dimensions of the step and grand gallery by means of multiples of the lunar synodical month and sub-multiples of 2,520 and 2,500, at least the last of which, in the shape of multiples of 5 and 25, had already been found in numerous positions in the Pyramid. Having thus bound myself hand and foot and rendered it impossible to alter the quantities by a hair's breadth, I showed that they without any alteration whatever pointed with exactness to the most important events in the history of the world during the last 2,500 years.

Mr. Searles first summarily disposes of my theoretical numbers; these have been "obtained from purely arbitrary sources after considerable calculation."

Mr. Searles evidently regards calculation or any other process requiring time and thought, as a very serious offense in

Pyramid students, and a sound *a priori* reason for rejecting their discoveries. Having then, after very scant consideration, cast aside and utterly despised the only possible means of ascertaining the exact quantities intended by the Pyramid architect, he makes his first attempt to substitute a better method, and most signally fails.

"For our part," he writes, "we prefer to go directly to the best authorities, who have actually measured the length, and compare their results." And what does he discover? That, as even the best measurers are only men working with imperfect instruments, their measures are not absolutely faultless, and in so delicate an investigation a very trifling mistake makes a vast difference in the reckoning; or in the words of Mr. Searles: "We thus see how a small discrepancy in the measurements makes a wide variation in the dates, and this should warn us to seek the measures from given dates, rather than to determine exact dates from the best of measurements."

Thus within less than a page he has entirely shifted his ground, and has been forced to abandon his first suggestion. His second method, which is even more objectionable than the first, will be found clearly stated at the foot of page 246: "The only satisfactory method of solving such a riddle, *if it be capable of solution*, is to prepare a schedule of all prominent marks in the gallery with their distances, also a schedule of important events in history with their dates, and then compare the two *without alteration* on different theories as to the starting-point, until a theory can be found that will reconcile one schedule with another." Now, this is a highly objectional method, because as dates are equivalent to absolutely perfect measures, whilst all human measures are tinged with error, the two schedules could by no means be reconciled without a large number of adjustments; and whether Mr. Searles would be likely to tolerate such adjustments, may be inferred from his having convicted me of having departed from Professor Piazzi Smyth's measure of the step height to an extent estimated by himself at about $\frac{1}{148}$ of a Pyramid inch. The chief object of my method is to avoid even the imputation of having altered measures in order to make them correspond with dates.

Mr. Searles evidently despairs of the "solution" of the "riddle." But if the investigation is to be strictly confined to points which would be remarked by an ordinary visitor, and if the signification of those points is to be determined merely by straight-forward measurement, I fail to see that there is any riddle to be solved. The reason given by Mr. Searles for rejecting my true end of the gallery floor would apply with equal force to the earth's axis; it cannot be of any importance because it is altogether invisible and "imaginary" (?). If Sir John Franklin had reached the North Pole and had cleared away all the icebergs, he would not have found even a brass-headed nail to mark the point of emergence of the line on which, nevertheless, this huge earth revolves. Seeing the ill-success which had attended the labors of students in general for seventeen years, and of my own in particular for five years in the direction of chronology, I arrived at the conclusion that the fault must lie, not in the Pyramid but in those very principles on which Mr. Searles now so strongly insists, but in support of which he has not produced a scintilla of evidence.

Dismissing, therefore, all preconceived ideas in regard to the canons by which the architect should have been bound in monumentalizing the divine scheme of times and seasons, I fell back on that mighty instrument by which all the great victories of science have been gained since the days of Bacon—the inductive method; and finding that the dimensions of the step and gallery, as observed, oscillated about grandly theoretical quantities, astronomical and prophetic, I assumed that these were the quantities intended, and proved my assumptions by indisputable historical facts.

Having said so much in defense of my method, I now proceed to justify my figures: Mr. Searles has, in attacking my values, relied much on the name of Mr. W. Flinders Petrie. Now a cursory examination of that gentleman's book will suffice to show that his measures can introduce nothing but confusion into an investigation like the present. How can Mr. Searles, who insists on accuracy to the third place of decimals, consistently ask me to use such expressions as 1693.7 to 1694.6 12.18 to 13.20? Petrie has in one place, on page 75, actually

used an angle of $26^{\circ} 12' 50''$, which does not exist in any single passage in the Pyramid. The use of such an angle would alter my reckoning to the extent of about five tropical years! On the whole, the measures given on page 75 are so discordant that they cannot be taken to represent approximations to the same quantities. I shall presently show from other measures of Petrie that they are as inaccurate as they are improbable.

Now, according to Professor Piazzi Smyth, the transverse height of the ramp is not a constant quantity, but varies from 21.3 to 20.3. The exact mean of six measures, three on the east side and three on the west side, at the points nearest to the step is 20.633. Now, Professor Piazzi Smyth's individual measures are only to the first place of decimals, and to my value corresponds a transverse height of 20.667. Passing by the numerous and careful measures of the Professor, Mr. Searles, from the heap of irregularities recorded by Petrie, on p. 75, obtained a particular value of the ramp height, viz: 23.62, with which to annihilate my theoretical value, and with it the date of the 18th Centenary in 1867. Now, Petrie has nowhere, on p. 75, given explicitly any measure of the ramp height. Therefore Mr. Searles must have obtained his remarkable ramp height "west side," which, moreover, he tells us, is "the mean of two good measures" from the following: "The height of the step-face is 34.92 or 35. on E. and 35.8 or 35.85 on W. . . . the east ramp-top varies from 13.20 to 12.18 below the step from E. to W. and the west ramp-top from 12.82 to 12.2 (?) from W. to E." (Petrie p. 75).

According to Mr. Searles, Petrie found by two careful measures on the west side "that 35.8 was the height of the step (evidently .05 is a quantity which, in dealing with Petrie's measures may be safely disregarded). Therefore, Mr. Searles must have taken as the interval between the surface of the step and the top of the ramp $35.8 - 23.62 = 12.18$. From the above it is perfectly evident that 12.18 is not the mean of any two measures on east or west, nor any measure, good or bad, on the west side, but the smallest quantity Mr. Searles could find even on the east side; and this he deducted, not, as I had a right to expect, from the mean step height, which would have given

32.2 as the ramp height, but from a measure on the west not for removed from a maximum. Petrie, inclined to be over-confident in the accuracy of his own measures, has appended to 12.20 the doubtful sign of interrogation. Therefore, the only measure on the west side with any pretensions to accuracy is 12.82, and, deducting this from 35.85, we obtain 23.03 as the only good measure of the ramp height on the west side.

I now proceed to test by means of Petrie's levels my theoretical values of the height of the step and the level of its upper surface:

"Level of face of step over pavement." (Petrie, p. 75)	-	-	-	-	-	-	1693.7	1694.6
Ditto. North end of gallery floor. (Petrie, p. 95)	-	-	-	-	-	-	852.9	852.3
Height of surface of step above north end of gallery.	-	-	-	-	-	-	840.8	842.3

Therefore, according to Petrie, the smallest possible value of the height of the step surface, even on the east side, is 840.8, corresponding to 839.96 Pyramid inches.

I now turn to the measures of Professor Piazza Smyth, and, though at this stage of the inquiry 20 angular seconds are not of much consequence, I take for the inclination the angle given by Mr. Searles, viz: $26^{\circ} 17' 40''$.

According to the Professor:

Floor length to foot of step=	-	-	-	-	-	1815.6
Inclined length under step	=	$\frac{61.}{\cosine\ 26^{\circ}\ 17'\ 40''}$	=	68.04		

(West side) total floor length= - - - 1883.64

These quantities are almost identical with the 1815.5 and 1883.6 obtained by Petrie on the east side; therefore the error in them must be small.

$1883.64 \times \sin 26^{\circ} 17' 40'' = 834.42$. But by measures on east and west the Professor found that the point where the ramp line struck the south wall was from 16.16 to 17 inches above the step. Deducting these from the ramp height we find that the end of the floor must be from 6 to 6.4 below the step surface.

Height of end of floor =	834.42	834.42
Interval between end and step surface	6. 0	6. 4
	840.42	840.82

Therefore, whilst Petrie has given us 840.8 as a minimum, the professor gives us as a maximum 840.82 (or 839.98 pyramid inches). So even with an angle of $26^{\circ} 17' 40''$ the measures of the two highest authorities meet in a quantity differing from my theoretical 840. by from $\frac{1}{15}$ th to $\frac{1}{50}$ th of an inch.

To avoid all possible objections, I now take Petrie's smallest level of the step, and I take it unaltered. It will soon indicate whether Petrie's value of the step height or the professor's should be accepted as the true one:

$$1815.5 \times \sin 26^{\circ} 17' 40'' = 804.24.$$

$$1815.6 \times \sin 26^{\circ} 17' 40'' = 804.28.$$

	East Side. (Petrie.)	West Side. (Piazzi Smyth.)
Height of foot of step	= 804.24	804.28
Height of step	= 35.	36.2
Height of surface of step	= 839.24	840.48
Ditto (Petrie's minimum)	= 840.80	840.8
Error =	1.56	0.32

Therefore the professor's measure of the step must be the true one, and deducting it from his measure 840.82 we obtain for the height of the foot of the step 804.62. But the angle required to give such a height with a length of 1815.6 would be $26^{\circ} 18' 23''$.

So on the whole we have:—

$$\text{Angle calculated from linear measures} = 25^{\circ} 17' 23''$$

$$\text{Mean of angular observations} = 26^{\circ} 27' 37''$$

(See L. and W.)

$$\text{Mean} = 26^{\circ} 18'$$

This angle will reduce the errors in level of Petrie and the professor to 1.4 and 0.16 respectively.

Unmoved by the objections of Mr. Searles, I still assert that the point (or rather line) at which the floor meets the surface of the step produced is not "imaginary," but a real line of preëminent importance: First, Because it is the true termina-

tion of the great chronological scale of this dispensation ; second, because it is in the central vertical plane of the building ; and third, because it rises above the north end of th
to the grandly theoretical height of $840 (= \frac{2520}{3})$ ^{Pyramid} inches.

On all these accounts we might expect to find here indications of some event of supreme importance. Now in the second part of my pamphlet I have, by an entirely independent method, deduced from the Bible and history a series of great events, separated from one another by periods, astronomical and prophetical. These might be represented by several lines converging to the same point, and that point 1260 years from the taking of Jerusalem by Omar, an event and a period clearly indicated in the prophecies of Daniel. Even if the ordinary date of our Lord's birth be accepted, the meeting point of all these lines might be represented in years by $1896.18 \pm$. But the belief is gaining ground that the error in the popular date amounts to only a few months in one direction or the other. So the ultimate expression to which we are led merely by history is $1896.18 \pm .4 \pm$. But if our theory of the meaning of the grand gallery be correct, the termination of its floor should represent the close of the times of the Gentiles. So on the whole we have :—

End of "Times of the Gentiles," obtained from

the Bible and history	-	-	=	$1896.18 \pm .4$
Same calculated from the Pyramid	-	-	=	1895.8578

Yet, Mr. Searles can see in the similarity—nay, potential identity—of these two expressions no evidence whatever of the inspiration which guided the hands of the builders.

If my readers are of the same opinion, it will be mere waste of time to continue the discussion. I may multiply proofs, but I shall never be able to produce better evidence, unless some number actually engraved by the architect be discovered on the great step, and even then we shall have to identify it with some event.

But if the identity of these two numbers be admitted, then I have already shown from the levels that the step height must

be 36.2 (more accurately 36.197) and the angle of inclination $26^{\circ} 18'$. To this height corresponds a floor length of 81.696, or 81 years, 8 months, 12 days. Moving back through this period, from February-March, 1897, we arrive at June-July, 1815. We have thus reduced to one month the time within which the event must have occurred; therefore, it can hardly be any other than either the battle of Waterloo on June 18, or the abdication of Napoleon on June 22, which was only a result of the victory. Three dates are given in my pamphlet, any one of which would set the matter at rest; to all of these Mr. Searles has objected on various grounds. I see no reason for altering to the smallest extent the quantities from which I obtained the date of the Infallibility, and having lately tested it by means of the tables of the Julian period in the Greenwich Nautical Almanack, I find that the remainder 0.65 disappears, leaving only July 18. However, as it constitutes a solitary instance of a second mode of reckoning along the surface of the step, and as it forms a part of the hitherto unsolved mystery of the seven overlappings, I do not insist on the date which is not in the least essential to my proof.

But the date April 20 (Gregorian), or April 22, A. D. (Julian reckoning), stands on an altogether different footing.

Mr. Searles has seized the tempting opportunity held out to him by the writing of his article to turn aside from my pamphlet in order to deliver a side-thrust at the inspiration theory in general.

I have not made any use of the measures of the well. Probably in it, as in other parts of the building, there is something of the nature of an enigma.

Although theologians hold widely different opinions in regard to the date of our Lord's birth, all with one or two exceptions admit that the length of his earthly life was from 33 to $33\frac{3}{4}$ years, and that He was crucified on either the fourteenth or fifteenth of Nisan. Therefore, if the Pyramid date of the Nativity be correct, the date of the Crucifixion must be either April 22 or April 23, A. D. 34 (Julian reckoning). Thirty-three years terminated on April 22, which was also the day of full moon.

Mr. Searles tries to discredit my decimals because I have not given the hour and minute of our Lord's birth, quite overlooking the fact that, as Rome was not built in a day, so the battle of Waterloo was not fought in a minute, but continued from a time variously stated at 10:30 to 11.30 A. M., until about 6:30 to 7 P. M. (Brussels time).

Thus the Pyramid gives at least two points from which to reckon. Counting from the beginning of the battle, and allowing about two hours for the difference between mean times at Jerusalem and at Brussels, we obtain for the hour of the Nativity 2-3 A. M. But counting from the hour of victory we are led to the time of the Crucifixion, 9:50 to 10:20 A. M. Now, according to the calculation of Sir G. B. Airy, the time of full moon was 10 A. M. (Jerusalem mean time).

Upon the last of the three dates, viz.: June 29, 1867, Mr. Searles has brought to bear his whole battery of arguments: it is founded on an incorrect value of the ramp-height; it is "in no sense a mark left by the builders of the Pyramid;" and the date 800 A. D., brought forward in support of it, is altogether irrelevant.

I have already disposed of the first objection.

If the grand gallery be a prophetic chamber, surely there must be *some line* designed to serve at least primarily as a chronological scale, and beyond controversy the floor must be that line. The foot of the step and the top of the ramp are marks left by the builders which even the most careless visitor could not fail to notice, and to the latter point on the floor-scale corresponds this date.

The last objection betrays a want of thought, for very little reflection must have shown Mr. Searles that the value of the date as a confirmation of what he is pleased to call the "Waterloo theory" must depend altogether on its *place in history*. It is not impossible that 800 A. D. may hereafter be discovered in the Pyramid; but, even if it be never found, it is still essential in showing that the Pyramid has discovered a wonderful connecting link between the Roman Catholic church and the ancient and "holy" Roman empires. Until my attention was directed to it by the ramp, I did not know that June 29 was St.

Peter's day, or that anything remarkable had happened on that day in 1867, or that the date was in any way connected with Charlemagne; and lately I have been led entirely by the Pyramid to the very fount and source of the Roman empire.

These questions had often arisen in my mind: You have traced the beginnings of the Babylonian, Medo-Persian and Grecian empires, but from what date are we to count the years of the Roman empire, the last and greatest of them all, in which, too, we are most deeply interested?

Was Julius Cæsar or Augustus the first emperor?

Now the only two hints given in the Scriptures of the duration of the fourth empire are afforded by the numbers 1260 and 666.

Now the length of the gallery, parallel to the floor along the ramp line, is—with an angle of $26^{\circ} 18'$, but with no smaller angle, 1881.8156, or in time February 11, 1883, and to February 11 in the year 1883, A. D., corresponds—February 14 in the time of the first two Cæsars.

February 14, B. C. 27, was the first day of the reign of Augustus as emperor, and the beginning of what is known in history as the Augustan era.

Not merely this, but if we bear in mind that the Roman civil day commenced at midnight, and believe (on the authority of Sir John Herschel) that, in consequence of previous mistakes, a day was not intercalated in A. D. 4, we shall find that 12 mystical months, reckoned from midnight February 13-14, A. D. 1, terminated at midnight December 24-25, A. D. 800, the first day of the reign of Charlemagne as emperor, and 28 months of Antichrist at 4 P. M. (Roman mean time) June 29, 1867.

Reckoning 52.03165 tropical years backwards from this latter date, we arrive at 11:30 A. M. (Brussels mean time) June 18, 1815 A. D.

In my pamphlet are two dates of which I have hitherto made no use, viz.: February 1927 and February 1972. The following calculations are correct to about 16 days:

February, A. D. 1, to February 1927 A. D. = 1926 years =
 1260×666 .

February, B. C. 27, to February 1972 = 1998 = 3×666 .

R. COURTENAY.

Tanna, Bombay Presidency.

EVIDENCES OF IDENTIFICATION OF THE AMERICAN AND BRITISH PEOPLES WITH LOST ISRAEL. A MARVELOUS DISCOVERY.

THE AMERICANS IDENTIFIED WITH LOST MANASSEH—THE BRITISH WITH THE LOST TEN TRIBES—INCONTESTABLE, CONCLUSIVE AND UNMISTAKABLE EVIDENCES—THE DEATH BLOW TO INFIDELITY.

Evidence No. 13.—England loses America. The declaration of Jesus Christ that He had no mission to destroy prophecy (Matt. v. 17.), and his confirmation that every jot and tittle of it should be fulfilled, is always a comfort to my soul. By this we can trace the actual fulfillment of so much of Scripture prophecy in the history of the British and the Americans. I am right down glad that America did declare her independence of Britain, Fourth of July, because if she had not, then Scripture would not have been fulfilled. It was a right thing for her to do, and when seen by the people, would do more to substantiate the Bible as the Word of God than any thirteen hundred sermons. I fearlessly declare that the American War of Independence and the grand Declaration, in 1776, is told as in the Bible, and was the result of prophecy, and if it had not taken place Scripture would have been at fault, God's Word would have received a stab, God Himself would have been untrustworthy, and the integrity of the Bible would have been destroyed. Nothing is easier to prove this in these pages, but may I say that when we find America and this war have a place in the pages of Scripture, it should have the effect on every Godly Christian and pious mind of welcoming the Bible as an invaluable book and rendering it the most thrillingly interesting work we possess. We have seen that by being identical with

Israel we had to renew our strength in the isles, by which we became over-crowded and in consequence had to go forth to establish the earth. The very first attempt that was made, in the direction of taking hold of a new possession, was the colonizing of America. When we of Israel went forth to perform our God-commanded work, the very first thing we did, in the matter of establishing the earth, was the acquiring of America (Isai. xlix. 8). We most wonderfully succeeded, notwithstanding we had to go between three and four thousand miles away from our shores, and in ships of such a construction that we should be ashamed of them in these days. Every ship, and every man within the ship, represented the spirit of the Bible in motion, not a soul in the enterprise that was not a living character on the world's stage, representing the drama of God's providence in one of the most wonderful plays ever acted. Every man was the representative of a prodigious host, penned up in confined boundaries, who had nothing but misery, disease and cannibalism before them, unless help was sent in this direction. Their work was an errand of mercy, for they went forth to save the lives of this host. It was the beginning of salvation to the British stock, and to this day we all have need to thank God, in the interests of a great people, that America was discovered and peopled by the very express "people of God." They went forth from Israel to found a new empire, and their going forth was directly in answer to prayer. By the promise God made to our father Jacob, when he had called him by the name of Israel, the seed had to become "a nation and a company of nations."—Gen. xxxv. ii. Of course this could mean nothing more than a large nation in the possession of many colonies, each of these colonies having parliaments of their own to provide for their internal or domestic affairs, but with no power to alter the constitutional laws of the mother country by which each colony would be governed. It is only in this way that any nation could become a nation and a company of nations, and most certainly only in this way that Israel could so become, but it is distinctly told us in Scripture that the very first attempt that Israel would make in this direction, that of acquiring America, would in the end become a loss

to Israel ; that after making the settlement, becoming prosperous by ever increasing in people, in stock, in wealth and in commerce, as the people gained in power and in strength, that they would clamor for independence and refuse to remain under the laws or constitution regulating Israel in Britain. By the Declaration of Independence, Scripture declares that Israel would lose this people, and again we saw the Bible would not be true unless this had happened. God saw this and comforts Israel under this distress. She was not to grieve about it, other outlets would be provided, other colonies would come into her possession, the seed would continue to go on increasing, and she would soon repair this loss. Hence God says, "The children which thou shalt have, AFTER THOU HAST LOST THE OTHER." —Isai. xlix. 20. Lost what? Why the children of America. Israel had to lose them. God and the Bible required they should become lost to her ; and in the very best interests of Scripture, we are glad that the event has taken place ; we rejoice in the fourth of July, and that since the loss God has proved Himself true by giving to Israel many other children that she can by no possibility lose.

It may be asked, that if Israel in Britain has lost America, why should she not lose her other colonies in the same way? We say that this would be impossible, because it would break the word of God in divers ways. It would destroy the promise of being "a nation and a company of nations," and also the promise of Israel being the Lord's measuring line to encircle the earth, Deut. xxxii, 7, 8., besides Scripture becomes perfectly satisfied with this one loss, which was only the separation of Manasseh from Ephraim or Israel, required by Scripture. Joseph, our forefather, had two sons.—Gen. xli, 51,52. Manasseh was the elder of the two. When Jacob came to bless them, "Joseph took them both, Ephraim in his right hand toward Israel's left hand, and Manasseh in his left hand toward Israel's right hand, and brought them near unto him ; and Israel stretched out his right hand and laid it upon Ephraim's head, who was the younger, and his left hand upon Manasseh's head, guiding his hands wittingly, for Manasseh was the first born. . . . And when Joseph saw that his father

laid his right hand upon the head of Ephraim, it displeased him : and he held up his father's hand, to remove it from Ephraim's head unto Manasseh's head. And Joseph said unto his father : Not so, my father : for this is the first born : put thy right hand upon his head. And his father refused and said, I know it my son, I know it : he also shall become a people and he also shall be great : but truly his younger brother shall be greater than he, and his seed shall become a multitude of nations ; and he blessed them that day, saying, In thee shall Israel bless, saying God make thee as Ephraim and as Manasseh. And he set Ephraim before Manasseh."—Genesis xlviii, 13-20.

From these Scriptures we obtain the clear distinction of Manasseh from Ephraim ; each was destined to be the headship of a nation ; both nations would come from the same kindred ; they were brothers to each other, and had to go in two separate roads, with characteristics to distinguish each. Ephraim is a synonymous term, and interchangeable with Israel ; indeed, each of these nations were to be named in Israel, because Israel said, " Bless the lads, and let my name be named on them," v. 16. Ephraim, or Israel, was the consolidated term of the Ten Tribes, just as Judah combines the two tribes, and Manasseh comes out, as a nation formed from one tribe only, the thirteenth tribe of Israel. The House of Israel, the ten-tribed House, or Ephraim, was to become a greater nation or "people" than Manasseh only in the sense of becoming a nation and a company of nations, whereas Manasseh was only required to be a nation without colonies. This Manasseh is identical with America, and the very fact that she has no colonies confirms this scripture ; just as the British, being Israel, have become a nation and a company of nations, and so sublimely substantiate the other scripture. Indeed, we hazard nothing by declaring that without the splendid histories of the two peoples of Britain and America, the bulk of the Scriptures would go for nothing. We all know that infidelity is a strong foe. She has the natural right to demand how the Scriptures we have quoted have been fulfilled, and I have to declare that

it is impossible for any Christian to give answer apart from the solution we are now giving.

It is well to remember that Manasseh did not separate from Israel when in the Land. She went with Israel into the Assyrian captivity, and she entered with Israel into the isles afar off. Therefore, it was only when in the isles that she could separate, and now we know the separation was only effected from the isles, an event confirming Scripture.

Thus we give the history of the real origin of the American people. Their root is in the Bible. Their own conception of their history is not according to fact. It is illusory. It was the will of God that they should have misconceptions upon this matter, in order to keep up the "blindness that was to happen unto Israel." (Romans xi, 25.) There is now no need any longer to keep up this blindness, because "the fullness of the Gentiles has set in." Therefore, it is now the will of God that we should come to the true knowledge of our origin, and why He has raised up His servants and enabled them very successfully to propagate the truth of our identity with Israel, which not only supplies our history in the past, but also supplies our destiny in the future, which is the brightest, the happiest and most prosperous of all the nations upon the face of the earth.

MEMORANDUM, OR PIOUS REFLECTIONS.

It must be conceded that every minister using a pulpit must be faithful to Bible interests. They ascribe great virtue to ordination and to their ordination vows. Their ordination is an oath on their parts to study the Scriptures, in order to become masters of the same. It involves the recognition of their duty to seek to be able to answer all questions placed before them, based upon the Scriptures. Their duty is to defend the Bible from its enemies. This is not a matter of inclination, compatible or otherwise with whim, but an unalterable demand upon their office. If their answers to the following questions were demanded of them by infidels, or righteous seekers after truth, it would not be a matter of choice with them, but an exaction from God on their parts to give answer according to their gifts. I avowedly declare that no minister should be unable to answer the questions I suggest, and I, Edward Hine, positively declare that no minister could answer them, apart from the identity light contained in the thirteen evidences I have given:

1. Was the restoration of Israel effected in Christ's time?
2. Does the distinction of Israel from Judah exist in the present time?
3. Are the Jews literally or spiritually fulfilling their prophecies?
4. As Judah is literally fulfilling her prophecies, should not Israel do so also?
5. How could a literal people RE-UNITE, or AGAIN unite with a spiritual?
6. Was the tribeship of Dan in the Assyrian captivity?
7. Why is Dan omitted from the future event of the sealing?
8. Is God truthful, or a liar?
9. Then

where are the Canaanites? 10. How are they thorns in the sides of Israel? 11. What did Christ RE-DEEM Israel from? 12. Why did the Apostles, when sent after them, find them using synagogues? 13. What Gentile nation was ever under the Mosaic law? 14. What Gentile nation was ever delivered from Moses? 15. What nation became dead to Moses? 16. What Gentile nation had Moses as schoolmaster to bring it to Christ? 17. If Christ was sent to the Jews, why did He speak to them that they should not understand him? 18. Would it be sanity for a missionary to the Chinese to speak to them in an unknown tongue? 19. If the Jews were to receive Christ, why did prophecy declare they should stumble over that stumbling stone? 20. Is prophecy a "sure word" when disguised or spiritualized? 21. Why did Christ declare the Jews should be desolate, or without Him, till he came a second time? 22. Why does God command them still to serve under Moses? 23. And why does God promise to accept them under Moses? 24. Why would Judah be disobedient to the will of God if they were converted? 25. Christ declaring all prophecy should be literally fulfilled; how could He be trustworthy if the Jews were now converted? 26. Are the countries Judah were to be dispersed in, in Heaven above? 27. If not, where are the isles Israel were to locate in? 28. Is there a west and north and intermediate points of the compass in Eternity? 29. If so, what isles above were Israel to renew their strength in? 30. If not, in what isles below were they to effect this operation? 31. If above, how did Israel establish the earth? 32. If these points only effect the localities of above, what interest could they be to us below? 33. If ministers are the blind, now trying to lead those that once were blind, what confidence should we place in their intelligence? 34. Has God broken His promise to call Abraham's seed in Isaac? 35. Where is the seed with this name now upon the earth? 36. What islands northwest of Palestine do they inhabit? 37. What desolate heritages did they acquire upon being overcrowded in the islands? 38. Which was the first colony they acquired? 39. Who were the children that became lost to Israel? 40. When did Manasseh separate from Ephraim? 41. How is Manasseh now, "a great people"? 42. What part of the earth is her nationality located? 43. Where is God fulfilling His promise of causing her seed to be as the sand of the sea? 44. If infant baptism is a new covenant in place of the old covenant of circumcision, where were the Americans under the old covenant of circumcision? 45. As God never commanded Gentiles to observe circumcision, would not the adoption of this, as a new covenant, imply the Americans were once under the old? 47. If infant baptism is the new covenant, then, is not the acceptance of this rite by American denominations a direct avowal that their forefathers were the people of Israel?

Evidence No. 14.—America's State Seal is Manasseh's.—We do not desire to make a long chapter upon this heading. It has been much discussed in the pages of this magazine. Able hands have the matter in their hold. Mr. J. H. Weldon, our Irish friend, did good service to this subject only recently, and if only Lieutenant Totten's promised work on the state seal was published, we should all find it invaluable. I have had the privilege of seeing it in manuscript, and can testify to its extraordinary worth. As suggesting how much can be said upon this matter, friend Totten's book will appear a thick volume covering hundreds of pages, every point of which I should claim as an evidence of identification in itself. It is enough for the pre-

sent service to claim as direct evidence the thirteen stars on the American coins, the thirteen stripes upon her flag, the thirteen olive sprigs in her eagle's right claw, the thirteen arrows in its left claw, the thirteen letters in the motto *annuit cœptis*, the thirteen blocks to her pyramid, or, to be short, the thirteen sets of thirteens to be found upon the American state seal as registered and copyrighted by Act of Congress, to mean, and only to mean, a direct avowal on the part of America that she is the thirteenth tribe of Israel represented by Manasseh. Of course we are familiar with the claim made by many unthinking souls that these thirteens arose because America was originally constituted by the federation of thirteen States. We unhesitatingly dismiss this claim with contempt. In her State seal her very eagle is made to speak, becomes positively a talking bird. Within its beak is inserted the celebrated motto, the second one with thirteen letters, *E pluribus unum*, proclaiming that America is "one out of many," or "one from many."

Now, if this motto of mighty import is made to apply, or have any bearing upon, the original thirteen States of America, it would be at once apparent to every intelligent mind that it would be sheer nonsense, for then it, the eagle, would be asserting on behalf of America that she, America, was composed of one State of these thirteen, when, of course, America comprised the whole of the thirteen original States, and not merely one out of them; therefore this suggestion must be dismissed as an absurdity. But still the meaning of the motto must be explained. America herself would be disgraced to flaunt about a motto without a meaning, and it is behoven now to gather round the motto and explain its meaning. I claim that it is only susceptible of receiving one meaning, and that the "one out of many" simply means one out of thirteen tribes, or one tribe from the thirteen tribes of Israel. It is not capable of receiving any other solution, and in our previous evidences appearing in these pages we have absolutely and conclusively covered sufficient ground to have clearly identified ten of the lost tribes of Israel. Now, we have said enough to assist our readers to distinctly recognize the last of the lost,

for only eleven tribes have been lost. We have put our hand upon the ten, and now we have done the same upon the eleventh, the lost tribe of Manasseh; or, taking into the total the two tribes of Judah, we have found our brother Manasseh, the thirteenth tribe of Israel.

Piazzi Smyth, F.R.S.E., F.R.A.S., the astronomer royal for Scotland, who some years ago complimented us for our services and research rendered to the cause of history and the service of our great empire, says, in his great work, 'Our Inheritance in the Great Pyramid,' page 577: "This was the first step towards the improved feeling, and even while it was establishing the newly found identity of the British people with the lost ten tribes of Israel, under the headship of, and inheriting the promises made to, Ephraim, the younger son of Joseph, but destined to become the 'greater,' even as a multitude of nations; but, in that case, where was Manasseh, the eldest son, also destined not only to survive, but to become 'a great people'? While others were merely wondering, a remarkable man, EDWARD HINE, who had already added the keystone to the arch of Anglo-Israelism by identifying the Normans with the tribe of Benjamin and the prophecies connected therewith, came forth at the right moment and showed that the great transatlantic nation, THE UNITED STATES OF AMERICA, was the very representative we were in search of, and that Britain and America were verily two brothers."

I have some seventeen distinct evidences of identity of America with Manasseh, but will introduce them further on.

EDWARD HINE.

THE MEANING OF THE COFFER MEASURES—HOW TO BUILD THE PYRAMID WITH THEM ON BRITISH MEASURES.

In a paper by J. Ralston Skinner of Cincinnati, written in 1881,* we have the following remarkable relations of the measures of the great coffer in the king's chamber of the Great Pyramid of Ghizeh.

"Now to the coffer. The measures thereof now to be given are all to be found as those made, actually, by Prof. Smyth (see his works) to within exceedingly close limits (from one to two hundredths of inches). Parker form of diameter to circumference of a circle 6561 to 20612. From this we can take the proportion $20.612 : 6.561 : 64^8 : 20.62647001+$. Call these terms *British inches*, and in the first and fourth terms we have the ancient *royal cubits*, so-called, by which cubits the Great Pyramid was constructed in all its parts. Take the third and fourth terms as 648 to 206.2647001+ inches, divide by 24 and we have, for circumference and diameter, (1), 27 to (2), 8.5943625+ inches; (1) or 27 inches is the inside width of the coffer. The wall of the coffer is 6 inches thick, therefore $6 \times 2 = 12$ inches added to 27 inches equals 39 inches, the outside width of the coffer; 39 inches multiplied by 2 equals 78 inches, which equals the inside length of the coffer. Multiply (2) or 8.5943625+ inches by 4 and we have 34.3774500+ inches, or inside height of coffer. This, in the scale of inches for feet, is the length of the king's chamber. Multiply 34.3774500+ inches by $\frac{1}{2}$ or 20.62647001+ inches by 2 and we have 41.25294002+ inches, which is the outside height of the coffer; 412.529+ inches is the length of the king's chamber. So we have inside width, 27 inches; inside length, 78 inches; inside height, 34.3774500 inches; outside width, 39 inches; outside length, 90 inches; outside height,

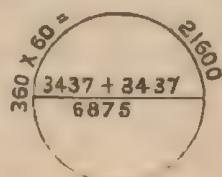
*A criticism of the legendre mode of the rectification of the curve of the circle. Robert Clarke & Co., Cincinnati.

41.252940+ inches. Cubic contents of inside of coffer, 72398.9097612846+ inches. Multiply this by 2 and we have the cubic contents of the outside measures, or 144797.81952256920+ inches. These measures, as said, compare with, and explain or interpret, Piazza Smyth's actual measures of this coffer. From the above, the thickness of the bottom of the coffer is 6.8754+ inches. This multiplied by 29 is 229.1830+ inches, which is the height of this room. So, also, 68.754 is diameter to a circumference of 216 exactly, which is the cube of 6.

Enough has been given to show that all the measuring, duplication, verification and correction, *cannot* arise from accident, but *necessarily*, and architecturally, from the above *modulus* of measure, originating the British inch as the fundamental origin of the measures of the great controlling nationalities of the world."

Leaving entirely out of the question "what is the true infinitesimal value of π ," I call attention to the remarkable nature of these figures. If Mr. Skinner has not the exact truth here, as to the intention of the great architect, he has it wonderfully close. That Mr. Skinner is in error as to the height of the king's chamber being 229.183+, I have no doubt, for it has been proved by Mr. Dow and Mr. Searles that the two heights are as follows: To the floor, 230.611064 and 235.470388 to bottom of floor course. But that is not the question with which we have to deal just now. Rev. H. G. Wood of Sharon, without any reference to the coffer, in his paper on the British mile, shows that the British mile originates from the measures of the circle of latitude in latitude 30, or in the latitude of the Great Pyramid, or almost exactly there, or referable to that place. His statement is that the Pyramid, in one sense, symbolizes and perpetuates the knowledge of the British mile, and that the place is where one minute of arc is equal to 5280 feet, which is the British mile. Now it will be observed that for this to be so, the radius of the circle must be equal to 100 times the number of miles as there are inches in the coffer depth, or 3437.7+—the diameter being twice the above, namely, 6875.4 miles, or 1000 times the thickness of the coffer's bottom, taking inches for miles.

Referring to the diagram, we see the relation of the numbers in the coffer to the circle where one minute of arc is equal to one mile. Multiplying the number of minutes in circumference (21600) by 5280 feet, we get the number of feet in the circumference of the earth at or near latitude 30. Multiplying the diameter 6875 + miles, by number of inches in a mile, we have 435,631,270 inches in diameter. Mr. Wood has shown that the common cubit of the Jews is 1.8151 feet or 21.78 *British inches*, or exactly the ten-millionth part of the radius of the circle in British inches. The above diameter is that of the earth in latitude where one minute of arc is equal to one English mile, that is, through the section of the earth in or near latitude 30, not through the centre. This diameter must bear some direct relation to the polar diameter of the earth. Taking the polar diameter to be 500,500,025 British inches, and deducting the above named diameter through the section from it, we have these peculiar numbers, 64868754.9110 inches difference. I did not, as we say, cook these figures, but they are very peculiar, viz.:



64,800,000 and 68,754.9, or added together, 64,868,754.9 inches. The first integers being the half of 1296, which are the integers of the seconds in a circle of 360, and the second is ten thousand times the thickness of the coffer's bottom. These may be coincidences but they are remarkable ones.

Mr. Dow has suggested in his paper that the true diameter, where the mile is equal to a minute of arc, is shown by the projection of the king's chamber measures southward to a supposed plane, about six miles south of the Pyramid, and it will be remembered that Mr. Wood got Professor Stockwell to calculate where this parallel of latitude should be found, where one minute of arc is equal to one mile, and his answer was from five to eight miles south of the Pyramid. This was long before Mr. Dow's paper. Now comes Mr. Beswick's remarkable paper, in this

number, showing that the place where these measures were laid out is on a plain about 5.75 miles south of the Pyramid; and this suggests the thought, "Does not the thickness of the coffer's bottom, 6.875 inches, symbolize in miles the distance south of latitude 30, where the minute of arc equals the British mile?"* In these papers we take what we think is the intention of the architect in the measures.

CHARLES LATIMER.

[TO BE CONTINUED.]

SIXTH ANNUAL MEETING OF THE INTERNATIONAL INSTITUTE.—INTERESTING REPORTS.

SECRETARY'S REPORT.

The sixth annual meeting of the International Institute for preserving and perfecting Anglo-Saxon weights and measures was held in Cooper Union, under the auspices of the New York and New Jersey branch, November 10 and 11, Charles Latimer, C. E., presiding. It was opened with prayer by the Rev. James French of Philadelphia. Mr. George Kellogg was elected secretary of the meeting. The treasurer's report was read, showing that since the last annual meeting \$2,156.48 had been received, and \$2,154.83 had been expended, leaving a balance of \$1.65 in the treasury with no debts outstanding.

A report in behalf of the committee on weights and measures was made by their chairman, stating that as the sub-reports were not all in, a final report could not be made at present.

The following had been prepared, and in part already published in the INTERNATIONAL STANDARD: "Hebrew Metrology," by J. R. Skinner, C. E.; "The Metrology of Coins," by S. Beswick, C. E.; "Metrology in Mechanical Industries," by S. F. Gates; "Linear Metrology," by Jacob M. Clark, C. E.; "Surface Metrology," by W. H. Searles, C. E.; "Electricity and Magnetism," by Colonel S. M. Chester; and "Cubic Metrology," by Lieutenant C. A. L. Totten. Several of these reports, not published, were read. In due time they will appear in the STANDARD.

At the afternoon session of the first day a congratulatory letter from Professor C. Piazzi Smyth was read, after which the following officers were elected: President, Charles Latimer, C. E. Vice-Presidents, Professor C. Piazzi Smyth, astronomer royal, Edinburgh, Scotland; Lucian I. Bisbee, Boston, Mass.; Jacob M. Clark, C. E., New York; Samuel Beswick, C. E., Strathroy, Canada. Treasurer, A. M. Searles, C. E., Cleveland, O. Secretary, Rev. H. G. Wood, Sharon, Pa. Assistant secretary, Miss Mary B. Sanford, Cleveland, O.

It was the understanding that each vice-president shall be *ex-officio* president of any local branch that may be organized in the vicinity of his residence, and that any local society may proceed in its own way for the election of all its other officers.

*See articles referred to in this paper by J. H. Dow, W. H. Searles and H. G. Wood.

The president spoke of the growing interest he felt in the work of the Institute. He reported that since the Institute was organized \$12,469.54 had been expended in its work.

Mr. Clark said that no small part of this expense had been borne by the president. The Institute should give him relief. Subsequently Mr. Clark's proposal was embodied in a report and resolution, submitted by the committee appointed to report on this matter.

Lieutenant C. A. L. Totten then read a paper on the migration of the lost tribes of Israel, identifying them with the people of Samaria who were carried captive into Media, and with the Cumbri of the Crimea who had migrated from Media after the captivity. From thence he traced them to western Europe and identified them with the Anglo-Saxons of Great Britain and their American descendants. He noted the striking similarity in the structure of the Hebrew and Anglo-Saxon languages as philological evidence of identity. In translating from Hebrew into English the order of thought is almost unchanged. He also read a paper on the symbolism of numbers in metrology, and especially called attention to the numerical value of the motto of the United States seal, "*novus ordo seclorum*." After a discussion of the subject presented by Lieutenant Totten, the meeting adjourned till Wednesday morning.

On Tuesday evening Mr. Edward L. Wilson of Philadelphia, gave a beautiful exhibition of Egypt and the Great Pyramid, with oxy-hydrogen light, in Chickering Hall. A large and delighted multitude witnessed the views. The president followed with an address on the purposes and work of the Institute, urging the necessity of preserving our Anglo-Saxon weights and measures, on the ground that they are derived from the weights and measures given of God to his ancient people; that in practical use they are far superior to the antagonistic system based on the French metre; that historically they are of great value; that the continuity of terms used in the description of land surveys is highly important to avoid confusion in titles to property; that the expense of altering the established measures employed in machine shops, and the weights used in retail trade would be enormous without any practical benefit. He also gave a few of the striking and significant measurements obtained of various parts of the Great Pyramid.

The Institute reassembled in Cooper Union Wednesday morning. The session was opened with prayer by the Rev. Mr. Wood. Professor Rogers' bars—one of steel, the other of glass—were exhibited, showing rulings on steel 10,000 to one inch, and on glass 25,000 to one inch. Professor Rogers has ruled 120,000 to one inch. Mr. Kellogg stated that the French metre is shorter than the English metre by a little more than one-fortieth of an inch. Stones from the Great Pyramid, Pompey's Pillar, Temple of the Sun, Cleopatra's Needle, the coffer in the king's chamber of the Pyramid, and other historic relics were exhibited.

Letters from the Rev. Jesse H. Jones, North Abington, Mass., and the Rev. Alexander Mackey, LL. D., R. G. S., Ventnor, Isle of Wight, were read, after which the appointment of committees on various subjects was considered. On motion of Colonel Chester, the president was empowered to appoint all committees.

After the reading and adoption of the report of the committee on raising funds in New York for the support of the Institute, the financial needs of the INTERNATIONAL STANDARD were discussed. Various plans to this end were proposed, in the discussion of which the president wished it to be distinctly understood that whatever support he might give the magazine it is controlled by the Institute. One cause of embarrassment is that one-third of the subscribers are in arrears, and more than one-half do not pay their fees. A motion for a committee on the financial support of the INTERNATIONAL STANDARD was carried.

Mr. Edward L. Wilson being present, a vote of thanks was given him for Tuesday evening's entertainment at Chickering Hall.

In a discussion of the cubit Mr. Clark said that the Mosaic cubit is the true cubit, and if we add to it a hand-breadth we have the polar cubit within a microscopic fraction of it.

Professor de Medici gave an illustrated lecture on the radical methods by which to arrive at the new system of values.

Colonel Chester, on "Electrical Units," recommended the entire abandonment of what is known as the C. G. S. system.

Mr. Clark then read a paper on the "Geodetic and Astronomical Relations of the Pyramid," by S. Beswick, in which Mr. Beswick held that the latitude of Memphis was where the ancient system of measures embodied in the Pyramid was obtained from actual measurement of the earth, the site of the Pyramid being the central station to which all measurements were referred; that the Pyramid was built on the results of geodetic survey in the latitude of Memphis; that the ancient Greeks and Romans sent their scholars to Egypt to learn geodetic and astronomical science, and that modern systems of weight and measure are traditions received from that ancient Egyptian source, more or less corrupted.

Mr. Wood said that from his investigations he believed that the origin of the English mile was in the actual measurement of one minute of longitude at or near the Great Pyramid.

Prof. Felt had investigated cubits, and said that the Egyptians had a sacred and a common cubit; one was used in measuring royal buildings, where the measurements were made downward from an imaginary point or apex, the other in measuring common buildings where the measurements were made upward from the base.

Mr. Clark's paper on the "Five-Fold Kingdom, Identifying Ancient American with Ancient Egyptian Life," was followed by a paper from G. M. Cox, entitled, "Who are the Picts?"

A discussion of the conditions and evidences of the ancient migration of races then ensued, after which the following committees were appointed by the President:

1. On Devising Means to Carry on the Magazine—Col. S. M. Chester, Lieut. C. A. L. Totten, W. H. Searles, George Kellogg, Mrs. E. Bedell Benjamin.

2. On Expedition to Egypt—Lewis Miller, Akron, O.; John F. Seiberling, Akron, O.; Chauncey Andrews, Youngstown, O.; W. U. Master, Cleveland, O.; Lieut. C. A. L. Totten, U. S. A., Garden City, L. I.; Rev. H. G. Wood, Sharon, Pa.; Rev. James French, Philadelphia, Pa.; Edward Wilson, Philadelphia, Pa. Lieut. Totten, chairman.

3. On the Origin of the British Inch, to investigate the following points. Is the British inch cosmic? How far back may it be traced? Is there a Pyramid inch? Is it the original inch? Is the British inch a degeneration from it? Is its cosmic nature established? What is its foundation?—Mr. Joseph Baxendell, Southport, England, chairman; J. R. Skinner, Cincinnati, O.; F. Gass, London, England; Prof. C. P. Smyth, Edinburgh, Scotland; James Simpson, Edinburgh, Scotland; W. H. Searles, C. E., Cleveland, O.; Lieut. C. A. L. Totten, U. S. A., Garden City, L. I.; Rev. H. G. Wood, Sharon, Pa.; Sanford Fleming, C. E., Ottawa, Canada.

4. Silver Coinage (International)—Dr. Watson F. Quinby, Wilmington, Delaware; Henry Kellogg, Washington, D. C.; Theodore Gribi, Springfield, Mass.; Prof. Hilgard, Washington, D. C. This committee to inquire: What is done in Congress? What is proposed to be done? What is the value of the claim of Wm. Wheeler Hubbel for a new alloy for perfect international coinage based on the French gramme.

On the Origin of the Division of the Circle—Prof. John Stockwell, Cleveland, O.; Prof. C. P. Smyth, Edinburgh, Scotland; Prof. W. A. Rogers, Cambridge, Mass.; Joseph Baxendell, Southport, England; Jacob M. Clark, New York; Lieut. C. A. L. Totten, Garden City, L. I.; Rev. H. G. Wood, Sharon, Pa.; George Felt, New York.

To this committee is referred the question whether the circle was ever divided into 240

degrees, and the Committee on Weights and Measures appointed at the last annual meeting was continued.

The President was empowered to add to these committees at his discretion.

The members of the Institute were especially gratified at the presence of Prof. Asahel Abbott, whose contributions to the pages of the INTERNATIONAL STANDARD are highly prized. An old man of more than four-score years, bent by long and hard study, whose eye still has the sparkle of youth, and whose interest in antiquarian research among Hebrew roots and astronomical data, does not abate with the increase of infirmities. He stood like a patriarch among the strong men.

The President having requested the gentlemen of the several committees to continue their investigations, closed the meeting as follows:

Ladies and Gentlemen: If this work is not of God, it will fail; but if it is of God, it will not die. There will always be some one to do the work.

The Institute then adjourned *sine die*.

H. G. WOOD, Secretary.

REPORT OF THE COMMITTEE ON WEIGHTS AND MEASURES.

At the last annual meeting of this Institute a committee of sixteen was appointed to consider and report on weights and measures. A meeting of the committee has not been possible. Correspondence has been the main channel of communication. Owing to the magnitude and diversity of the work, a finished report cannot now be made.

To facilitate their labors, each member was assigned a special department and requested to investigate and report on the best unit of weight or measure for it, also its best divisions or multiples for use, its relation to ancient and modern systems of metrology, and the ease with which its correlation with the Anglo-Saxon could be established.

Reports have been received from Messrs. J. R. Skinner, C. E., on Hebrew metrology; Samuel Beswick, C. E., the metrology of coins or values; Jacob M. Clark, C. E., on linear metrology; S. F. Gates, on the best measure for use in mechanical industries; and Colonel S. M. Chester, on electricity. Lieutenant C. A. L. Totten has given the result of his study of cubic measure in a volume, published last fall by Wiley & Sons of this city, and entitled 'An Important Question.' Professor C. Piazzi Smyth has given his view of the unit and measure of time in the well-known volumes, 'Life and Work at the Great Pyramid' and 'Our Inheritance.' Valuable contributions, bearing on the work of the committee, have been published in the INTERNATIONAL STANDARD.

Mr. Skinner brings out the important fact that numbers in Hebrew usage were essentially symbolical. Mr. Beswick gives conclusive evidence that the numerical base of ancient Hebrew weights and measures was 1296000, the standard weight of the gold talent in grains. He also shows how various Anglo-Saxon weights and coins are related to this base number. Colonel Chester shows that the present units for the measure of electricity are not satisfactory. Lieutenant Totten, allowing a deterioration of 1-6000th in the Anglo-Saxon unit of capacity, identifies it with the coffer in the Great Pyramid. Professor Smyth finds the year measure of time indicated by a base side of the Pyramid. Numerous correlations of ancient and Anglo-Saxon weights and measures have been discovered tending strongly to confirm the belief that we are investigating a subject of great antiquity. There is hardly ground for doubt that very great attention was given in most ancient times to the study of metrology. The notion that the learned astronomers and mathematicians of antiquity created a standard of measures, by getting an average length of human arms or finger joints, is unworthy the evidences they have left of their skill and knowledge.

The opinion that those systems "originated before anything like intellectual culture existed," and that they were "constructed without thought of scientific method and owed their earliest forms to accident or caprice," is wholly untenable, a contradiction

of the best historical evidences and open to the charge of disrespect to Hebrew antiquities.

There is good reason to believe that even modern systems of metrology, diverse as they may appear, are traditional remnants of usages current 4,000 years ago.

It does not appertain to the Anglo-Saxon race to cut loose from historical antecedents. It is conservative in its customs, laws, religion and philosophy. Historical isolation is obnoxious to the Anglo-Saxon mind. It reveres ancestral lines, and whoever attempts to overthrow its metrology must expect an opposition natural and persistent.

But no one claims that Anglo-Saxon metrology is perfect. The problem which this Institute has taken to solve is, how to make it perfect without destroying its historical connections. In the performance of this task a few principles are to be observed: a prime unit, simplicity in the construction of tables of weights and measures; a few standard subdivisions, convenient for use; respect for historical usage; a geodetic basis; easy correlation of the different tables; and possibly some regard to the symbolism of numbers akin to that which obtained in ancient Hebrew metrology. The French metric system is extremely simple in the construction of its tables, correlation is excellent, it has a geodetic basis, but it cuts loose from historical lines, and the subdivisions in its tables are most inconvenient for use outside of the office or counting room, and as yet it has failed to give a satisfactory decimalization of the circle.

Some effort has been made by members of the committee to rectify Anglo-Saxon metrology without imperiling its main structure. Lieut. Totten, in 'An Important Question,' gives a complete decimal system, including a decimalization of the circle. His standard of length is 1-10,000,000th of the semi-polar axis of the earth. His standard volume is eight cubic units of the standard length. His standard weight is a standard volume of material 5.7 times the density of water. His division of the circle is 24 aliquot parts decimally subdivided. He gives no table of values. The prime unit in this system, called standard length, is equal to 25.025 British inches. Its adoption in this country requires an increase of the foot, and its derived measures by 1-1000th part, a decrease of 4 per cent. in the ounce weight, 20 per cent. in the pound weight; an increase of 24 per cent. in the United States quart, and 2 per cent. in the imperial quart of Great Britain. These changes, except in the standard length, are greater than is required by the French metric system, in which the litre is 5 per cent. greater than the United States quart, and the half kilogramme is 10 per cent. heavier than the pound avoirdupois.

Mr. Clark's system of rectification is decimal; it is incorporated in Lieut. Totten's. In taking 1-24 000th part of a mean great circle for a standard mile, he changes the English mile from 5,280 to 5,472 feet, and divides the foot into 10 parts.

Another schedule of weights and measures by Dr. Watson Quinby, is embraced in Mr. Gates' report. Dr. Quinby's system, like Lieut. Totten's, increases the British inch by 1-1,000th. The foot is 12 of these greater inches. The standard volume is 1 cubic foot. His ounce measure is 1-1,000th of this standard. His quart is 32 ounces. His standard weight is 1 cubic foot of water—the ounce weight is 1-1,000th of this standard, so that the ounce weight of water is identical with the ounce measure of water. He takes 1-432nd of the ounce of water, and calls it a grain weight equal to .004 inches of water; and 250 of these grains to make one ounce weight—that is, the ounce weight equals 1.728 ins. of water. For circular measure he divides the circumference into 1,296,000 seconds. The changes involved in the adoption of this system are an increase in all linear measures by 1-1,000th part, a decrease of the present United States quart by 4 per cent., and an increase of the present avoirdupois pound by 1-1,000th part. The simplicity of this system, with its unique correlation and remarkable approximation to the present United States standards, will not be questioned. The greatest practical objection to it lies in the small change of 1-1,000th in linear measures. Could Dr. Quinby's system be built upon

the present British inch, adjusting quarts and pounds to it, less disturbance to the vast mechanical industries of Anglo-Saxon nations would be experienced. One pound of tea is not required to fit another pound; but in stone, metal and wood work multitudes of articles are made to *sise*, and the instruments or machines, for which they are prepared, are scattered over the whole country. A change of 1-1,000 in the standard inch involves the loss of immense property. Would it not be better to let the British inch remain as it is, and make 1 cubic foot of 1,729 inches the standard volume, and 1 cubic foot of water be the standard weight, providing that the water be brought to such temperature and so divided as to admit of the closest and most convenient correlation with measures of volume? It may be observed that the United States quart is almost exactly one-thirtieth of a cubic foot. A foot measure of length divided into 12 parts, and differing from the British foot by only 3 per cent. on the average, and by less than 7 per cent. in the extreme, is found in nearly all metrological systems, and the Anglo-Saxon cubic foot is very nearly commensurate with measures of volume now in use. As the "fuss," "foot," "fod" and "pie" are nearly equivalent to the Anglo-Saxon foot, so integral multiples of the "viertel" in Germany, the "litri" in France, the "azumba" in Spain and Mexico, the "imperial quart" in Great Britain and Canada, the "quart" in the United States, the "kama" in Norway, the "quartier" in Russia, the "boccali" in Rome, the "eine" in Austria, are nearly equivalent to the cubic foot of Anglo-Saxon use. It appears also that the "pfund" "funt," "libbra," "sottel," "maund" and "catty" of foreign nations are so nearly the weight of our avoirdupois pound, that the cubic foot of water is almost an exact multiple of them, the average variation being one third of one per cent. In Egypt, France, Holland, Brazil and Greece, the variation is only one-tenth of one per cent. In forty-two out of forty-six nationalities the variation is less than one per cent., and nearly eighty per cent. of them divide the pound into sixteenths. It appears as if this traditional Anglo-Saxon foot had been preserved amidst the historical revolutions of the past to be lifted in these latter days against the enemy to tradition. As the British inch has gone far to solve the problems of monumental antiquity, so it may be found that the modern confusion in weights and measures is reducible by means of the Anglo-Saxon foot.

But the question is still open how to determine and test the standard foot. All efforts to fix such a standard by taking the average length of human steps, or the mean height of men, or the length of human feet, cannot but be regarded as unscientific in method and inaccurate in result. The only right way of handling the subject appears to be to take some certain and invariable earth measurement. The French metre was thus obtained. Among Pyramid students 1-10,000,000th of the semi-polar axis has been a favorite standard of reference. The British metrological commission resorted to the pendulum method and recommended that the standard inch be a certain incommensurable part of the length of a second's pendulum at London. The prime unit or standard in a perfect system of metrology ought to be a measure both definable and attainable. It is believed that the polar axis is determined within 1-40,000th part, and a system based on it would be correct to the fourth place of decimals. The polar axis, however, is an ideal standard. It cannot be actually measured; neither can a circle of the earth be measured. It is impossible to do it. The practical question is what method of defining and determining a prime standard is most convenient and least subject to error.

A writer in the *INTERNATIONAL STANDARD* has proposed that the standard should be a differential pendulum as a prime standard of length. It is a pendulum of variable lengths of sixty, and one hundred inches. He says that the length of the pendulum at the Great Pyramid, at exactly 25 degrees north latitude, is the same as the length of the pendulum at the North Pole. He also says that the length of the pendulum at the North Pole is the same as the length of the pendulum at the South Pole. He also says that the length of the pendulum at the South Pole is the same as the length of the pendulum at the North Pole. Whether his theory can be sustained or not, it is a very interesting one, and one that is worth considering.

But whatever prime unit be made the basis of a metrological system, a simple and practical subdivision in the tables is important. The English foot of 12 inches might be made an international standard of length, with only an average increase of 2 per cent. in the foot measures of European nations. No unit for small lengths is more convenient than the inch with successive divisions by two, three or five. The mechanics' eye naturally catches the middle point of two marks. Hesitation in the use of a shop measure involves great loss of time. The cubic foot, 1,728 inches of water, is a natural unit for weight in pounds, if the pound consists of 16 ounces; for the weight of a cubic foot of any substance, in ounces, is equal to its specific gravity. Could agreement be had by adopting the Anglo-Saxon foot as the international standard of length, volume and weight, agreement in its multiples and subdivisions might in due time be reached without sensible disturbance to national industries.

The creation of an international system of metrology is worthy of great and expensive labor. Whether this can best be done by the adoption of an entirely new standard and new revision of weights and measures, or by returning to one or two simple units that have been identified with civilization from most ancient times, is the question that lies at the root of this whole subject. If people will, they can adopt any system, but the results of adopting a system not in accord with the physical and metaphysical structure of the universe, are beyond human control. A remote calamity is involved in building upon an untrue foundation. The object of this Institute is to avert such a calamity, to work along the lines of providence, and to conserve the Anglo-Saxon units of metrology as veritable inheritances from remote antiquity.

In behalf of the Committee on Weights and Measures,

H. G. WOOD, *Chairman*.

REPORT UPON MEASURING AND DEFINING UNITS OF ELECTRIC AND MAGNETIC ACTIONS.

ELIZABETH, NEW JERSEY, November 9, 1885.

REV. H. G. WOOD, Chairman of Committee on Weights and Measures:

Dear Sir:—I respectfully submit the enclosed report upon measuring and defining units of electric and magnetic actions.

Yours very truly,

P. M. CHESTER.

In reporting upon the subject matter entrusted to him, your committee has been guided by a firm belief in the truth and accuracy of the following propositions:

First—An action of unknown conditions can only be measured and defined by comparing it in each and all of its conditions to another action of known value, conditions and effectiveness.

Second—No action is, in the abstract, appreciable or measurable, and its value and conditions can only be estimated by its effects upon visible matter, or by a series of comparisons of effects after conversion into other modes of action.

Third—All modes of action are interchangeable—convertible each into the other, either in the same or different forms of condition, and exact correlations may exist.

Fourth—The value of any action may be practically, and perhaps sufficiently, though not entirely, defined by describing the mass of matter affected, and the energy, velocity or intensity of the effect; or the abstract action may be described as possessing defined "quantity" and "energy" when it is known to possess the capacity so to affect matter, or do work.

Fifth—Exact correlations between two actions can only be said to exist when each condition of the one action corresponds with each condition of the other.

Sixth—Motive action, as it most directly and visibly affects matter which can be

weighed and measured, has been universally accepted as the standard to which all other modes of action may be compared, and their quantitative and energetic elements computed and defined.

Seventh—In practice, motive action is deemed sufficiently described when the quantity of matter affected and the velocity of action are separately indicated, and no units or terms exist by which *all* existing conditions can be entirely defined.

Eighth—Between certain actions, correlations known to exist can not be established directly, because the effects of some actions upon matter are not directly appreciable, and that any effect exists is only apparent by the conversion of the original action to action of other form, the effects of which are appreciable and measurable. This invisible effect is undoubtedly a disturbance of molecules, varying in each case with the form and energy of the action.

This is notably true of magnetic action, and this hypothesis plausibly and reasonably accounts for all the phenomena of electric heat, sound and other conduction, and "*resistance*," which, as a recognized condition of matter susceptible of exact and minute measurement, is an important factor in all electric investigations.

"Resistance" is doubtless the antagonism of cohesive action, to the disturbance of molecules or groups of molecules set up by any action. Hence a certain loss of value in original action, expended in overcoming this antagonism. Hence the varying conducting value of material, the molecular construction of each being adapted to different groupings when disturbed. Hence the conversion of one action into another.

Ninth—The average human mind does not understandingly receive abstract propositions, except when compared with familiar propositions relating to physical conditions of matter; and even the trained and cultivated mind, after long practice and discipline, with difficulty conceives of quantity, energy and conditional form in an abstract action, a mode of doing. Hence the necessity, not only in communicating ideas to others but in each individual mental operation, of referring to complicated physical illustrations with the danger of confusing the illustration with the abstract fact, and of employing not exact but illustrative terms which are themselves misleading.

Tenth—Because of the facts stated in the second proposition, it is rational that in selecting units and terms to define the value and character of any action, that they should most clearly express the value and character of effect upon matter. Also in choosing between synonymous, or nearly synonymous terms, those should be selected that will, as nearly as may, be expressed equally, *corresponding*, even if unlike effects produced by different modes of action.

Lastly—For reasons assigned in the eighth proposition, no one mode of action can be separately treated, and its method of measurement be efficiently determined upon, or a system of nomenclature established, without some consideration of those other modes of action that are inextricably connected with it, so far as all computations are concerned.

It has been said that practically the value of any action may be sufficiently, if not entirely, indicated by defining its "quantity" and "energy." The word "energy" is herein used in its general and broad sense, as expressive of that quality which in motive action might be defined by the words pressure or velocity; in heat action, thermal altitude, chemical action, etc. In electric phraseology "energy" expresses the product of quantity and what has been here termed energy. It may also be here remarked that while the terms quantity and energy would seem to be applicable only to amount of matter and effect produced, and the qualities can only be estimated by such physical effects for reasons which will presently appear, they will be used as descriptive of the abstract action or as expressive of the inherent capacity to effect.

The application of electricity in art has been so extended, and its infinitely varying phenomena have been utilized through so many different mechanical appliances, that the

units measuring different qualities are numerous. No other force can be so accurately and minutely described. To use a figure of speech, its length, breadth, thickness, weight, speed, energy, compressibility, each is defined.

Any one electric action may be accurately compared with any other electric action.

But electric engineers carry their own tape-lines, scales and tables, which do not correspond with those used to measure other actions.

This is by no means due alone to the vicious choice of terms by the electric school, but in measure from the fact that in motive action, the standard of comparison for all other actions, no units exist by which to measure some corresponding qualities. In motive force the quality of energy has no name or unit, it is clumsily expressed by describing the process of measurement, giving physical units. "Quantity" is expressed in physical measurements of the material moved.

In electric measurements the descriptive unit applies to the inherent quality itself without reference to the matter affected.

Whilst, in the conception of your committee, it is eminently proper that the inherent qualities of *all* abstract actions should be directly expressed by descriptive units of universal and cosmic application, it should not be overlooked, first, that the accurate estimate and measurement of such qualities is only arrived at through the measurement of matter; and second, because of the human infirmity above alluded to, and because of the necessity of physical illustration electricians as well as laymen are prone to confuse the illustration and abstract proposition, and treating electricity as a *thing* for purposes of estimate and illustration, it becomes difficult to conceive of it as simply an action and not as material matter.

This may be best illustrated by one or two quotations from an accepted text book.

The author after illustrating the quantitative and energetic qualities of electric action, by comparison to a column of water in a tube, wherein the diameter of column expressed the quantity and the derived pressure as corresponding to electro motive force, says: "The notion corresponding to quantity of water and pressure are quantity of electricity and electro motive force (energy). Electric pressure and quantity can not be compared with pressure and quantity of water, *not being measurable in feet and pounds.*"

Of course not. In the one case matter itself, the water is directly measured in physical units. In the other, inherent qualities in an abstract action are to be defined by descriptive units.

To illustrate. Air may be, by motive action, condensed to fill a receiver with two atmospheres.

While in this case the air matter is used as a medium, its weight, bulk, physical properties need not be considered. We need simply conceive that a motive action is stored up and contained in the receiver which may be defined by three descriptive units expressive of quantity quality, energy, quality, and rate of action-quality.

The *pressure*, or to use electro phraseology the "moto-motive force," is fifteen pounds to the square inch, or through an escape of one inch area it would move fifteen pounds. In this case the area of escape would represent the quantity, the unit being one square inch. With two area of escapes the form would be $2\text{ sq. in.} \times 1\text{ lb.} = 2\text{ effects, or } 30\text{ pounds moved.}$ The third unit would measure the *rate* at which $1\text{ sq. in.} \times 1\text{ lb.}$ would move 15 pounds. Now these several qualities of stored motive force (or stored energy as electricians would express it), can be distinctly defined in exact terms, although the existence of the latent force could not be appreciated nor its conditions and qualities measured until by movement it had appreciably affected matter.

The units now employed in electric measurements are these:

Of Quantity.....	Q.....	the Coulomb.
" Current.....	C.....	Ampère
" Electro Motive Force.....	E. M. F.....	Volt.

" Work or Energy	W.....	Joule.
" Power.....	P.....	Watt.
" Capacity.....	K.....	Farad.
" Resistance	R.....	Ohm

It will be observed first that the ohm and farad are not properly units measuring or expressing degrees of action, but rather qualities of material matter. Next that W. and K. are rather products of Q., E. M. F. and C.

The ohm and farad are, however, important factors in determining electric measurement.

"Resistance," as a quality of matter, has been herein-before sufficiently explained.

The *farad* may be illustratively described as the measure of a condenser or a Leyden jar of capacity to be charged with a unit of quantity under pressure of unit electro motive force.

As in all other actions, so in electric action the units of quantity, pressure and rate are the important factors.

These units are thus described in the books:

Conlomb: "The quantities developed against the resistance of 1 ohm in 1 second under the pressure of 1 volt.

Ampere: "The rate of 1 conlomb per second. The current against an ohm under 1 volt.

Volt: "The electro motive force that would cause a rate of 1 ampère (1 conlomb per second) against 1 ohm, or the E. M. F. that would charge a farad 1 conlomb."

The ampère is the unit of what is improperly called "current." Care must be taken here not to become involved in that confusion that has misled not only the laity, but expert electricians. The term "current" is not used in any sense analogous to that by which we would express the flow of a stream of water, fluid or gas. Electricity, being an action, has no current, no flow. Yet, used illustratively, and not in the technical sense (meaning rate) either, it is constantly employed by practical experts.

The confusing effects of this phraseology appears in the following quotations.

In preparatory explanation the author remarks: "Scientific men do not look upon electricity as a fluid, and the term 'electric fluid' has led to many mistakes."

Shortly after, however, he says: "Electricity can be looked upon as an imponderable fluid, which, like gas, is compressible, the volume varying inversely as the pressure."

Again he apologizes for the use of misleading terms, thus "Science does not know what electricity is, but it is supposed to be a kind of motion of molecules or of ether very closely allied to heat and light. Science knows little about molecules or ether, and does not even know if there are such things, but thinks the next thing to understanding anything is naming it."

The *Joule* is the unit of the product, or rather resultant of Q. \times E. M. F., and perhaps corresponds with momentum in motive action.

From the foregoing definitions it appears that the ohm is the foundation upon which each other descriptive unit is built. Of course, then, any modification of the ohm would imply a sequent modification of each other unit.

Hence, a possibly slight modification of this measuring gauge, and of the time unit, might result in the establishment of a power and work unit, that would correspond with units now used, or which may be hereafter used, to define the conditions of other modes of action.

The ohm now generally accepted is measured by standard bobbins of wire approved by the British Association, and it is intended to establish a unit of working power equivalent to "a force that will give a mass of 1 gram a final velocity of a centimetre per second by allowing it to fall on it for a second." This is sufficiently accurate for pres-

ent purposes to state this more simply, a gramme moved a centimetre in a second. This is known as the C. G. S. system.

As the great mass of practicing electricians have the terms of this system at their finger ends, and they have by more or less intelligent, but certainly long continued practice, acquired a finger and thumb dexterity in the use of measuring instruments and tables, it would be almost hopeless to popularize any fundamental modification in nomenclature, or in the measuring value of the units now employed, were it not for this fact.

The standard ohm, approved and adopted by the British Association, has been so inaccurately determined that it does not accomplish the object intended, and does not accomplish a C. G. S. unit of force.

The attention of leading electricians has been drawn to this subject, and the propriety of a correction of the present system has been warmly discussed.

Sir William Thompson openly expresses his dissatisfaction, and recommends the abandonment of the C. G. S. system.

This is the more significant as Sir William is an enthusiastic advocate of the French metric system. His general views, though interesting, may not be discussed within the circumscribed limits of this report.

The subject of electric measurement, embracing as it does the careful consideration of other actions in connection, is too broad and comprehensive to be treated briefly or hastily discussed. Your committee regards this report a preliminary only to earnest, intelligent and deliberate discussion by and between the associate committees in the several departments, who now for the first time interchange views, and by all other members of the society. With this conception, no specific units are now definitely recommended, nor can they be until the reports of other members of the general committee are received, studied and digested.

Your committee, however, in advance unequivocally recommends the abandonment of the centimetre, gramme, second system, and the adoption of a system hereafter to be worked out, based upon a system where distance shall be measured in decimals of a perfected (pyramidal?) inch, weight in decimals of a perfected (geometric?) pound, and time in decimals of an hour.*

It is by no means certain that any modification of the standard ohm would be required. A slight modification of other factors might accomplish all.

It is also recommended that such technical terms as are of doubtful and misleading significance should be abandoned, and others of unmistakable significance substituted.

All of which is respectfully submitted.

S. M. CHESTER.

SUB-REPORT OF COMMITTEE ON WEIGHTS AND MEASURES.

LINEAR MEASURES, INCLUDING ITINERARIES.

In the space appropriate to a preliminary report on this branch of the subject, at the present stage of the committee's work, nothing more can be done than to direct the general reader to a few prominent *indicia* whereby the ancient correlations can be traced. The vast material wherewithal to enrich and complete the illustration must appear elsewhere. The simplest view is had from a time in the very dawn of letters, long anterior to the Medo-Persian alliance, when the systems correlated with the plainer and simpler forms of pre-Pharaonic Egypt, and with them, pointed back to a far earlier expression of Nature through an absolutely perfect geometrical system.

In recommending the standard unit of linear measure to be $\frac{1}{25,000,000}$ part of the earth's semi-axis, as near as reasonably ascertainable, and to be divided into twenty-five

*The geometric second, $\frac{1}{86,400}$ hour, is represented on the earth's mean surface by a geometric

inches, we are but repeating the views of Callet, in France, one hundred years ago, followed by Sir John Herschel and many others among the very highest of human authorities. And by making the itinerary to be 24,000 miles to the mean circumference of the earth, the relations flow out spontaneously, as shown in the schedule (heretofore published in the STANDARD), which will of itself be clear to the general reader. (See system proposed below).

For all purposes of popular geography and of navigation, we know the mean circumference with sufficient precision by Clarke's elements of 1878. For geodesy and the higher scientific uses, many will prefer the polar cubit; for the straight base between any two observatories is best ascertainable by the earth's axis and her perimeter.

It has been noticed that the itinerary span, 6.56 cosmic inches, is precisely 9 Egyptian digits, and is the diameter of a circle whose circumference is the *royal* cubit. It may be viewed as the cube root of an adjustable 10 pint gallon, and of 10 pounds weight in water. It is one-fourth of the Asiatic pic, which is a decimal of the parasang.* It is the distance between the ends of the thumb and middle finger, moderately extended. The polar cubit is the natural cubit of the arm-pit. The geometric fathom is the natural reach of the arms without effort. The natural foot is one-seventh of the normal height of a man, or 70 inches; and the inch is the first joint of the middle finger.

All these dimensions are natural, and fully expressive of the structural relation of man to the cosmos, in the body, mind and spirit. The table aims to show the best divisions and multiples for use, but with the idea that others, like the twelve inch foot, the twenty-four inch rule and the thirty-six inch yard should be optional. Their relation to the convenience of men, as expressed in the remains of their systems, is shown by the fact that, making reasonable allowance for degradation and probable differences of origin, these typical forms represent in ratio with all the quotations,

The 25 inch cubit, over 65 per cent.

The 250 inch perch, over 85 per cent.

The 200 inch rod, over 98 per cent.

The 100 inch reed, over 50 per cent.

The 65.6 inch fathom, over 57 per cent.

The 10 inch foot, over 33 per cent.

If the quotations could be recovered according to population, the ratios might prove to be more remarkable still. Surprisingly accurate representatives of the polar cubit are quoted from Lorraine, Brescia, Parma, Rome, the German States, Arabia, Persia, Algiers, Patras, Candia, China, etc. Analogies of all the above dimensions are numerous in all parts of the world. (For a more extended view, see "Metric Analogues," INTERNATIONAL STANDARD, May and July, 1883).

The transition factor, 41, which establishes binary relations within the proposed itinerary, is seen to be the reciprocal of seven times the earth's ellipticity, very nearly.

The ancient systems were very generally itineraries, and it is now well known that several of them were connected with each other upon some division of the terrestrial circumference, while the manual cubit and minor members were reached by special divisions. So long as nationalities kept distinct, and the principle of correlation remained known, the differences would not be very troublesome. The best modern instance of the principle upon which they connected, or new connecting systems could be framed, is the Russian. The verst, one-tenth of the Swedish and old Hanover and Brunswick mile, is eight Egyptian stadia (300,000 to the circumference), so that it is sixty-four one-hundredths of the geometric mile, and is contained 37,500 times in the mean great circle, and 24,000 times

* Mr. Alexander quotes the zereth of the Hebrews at about one-third of such a pic. A more symmetrical form would be one-third of the polar cubit, so that, with this cubit as radius, the zereth would be the tangent of the minor component of the octant = half the smaller acute angle of the 3, 4, 5, Pythagorean triangle.

in about the parallel of Prague and Cracow. And it connects with all the ancient *geographical* systems, except the Babylonian, by a series of simple factors.

The key to all these correlations is the agrarian schœnus of Egypt, which Bishop Cumberland, unwittingly shows, and the Turin cubit and the Coptic sedan prove to have been a cosmic dimension of 100 adjusted 'elbow cubits' of twenty-four digits. The Bishop also states that Moses took the cubit at one-eightieth of the schœnus, so that he could lay out the land in terms of the Phenician aroura. But his fathom was four cubits and the Egyptian three, so that the parasang became thirty Mosaic, but fifty Egyptian stadia. The Syrian or Philetairic mile was 16,000 to the great circle. In this way the principal relations of ancient and modern metrics are easily traced. But there were non-geographic itineraries, like the Greek and Roman military mile, the Pythian (though this may have been meant for 22,500 to the circle), the modern English and the Arabian.

There is considerable reason to believe that the English mile was first derived from Eratosthenes (whose operations look like an attempt to bolster up some form of the Babylonian cubit on a 25,000 mile circle), and that it had been changed. The Arabians seem to have attempted 500 reeds, but to have made their mile non-correlative, both with the earth and with their present gauge, by using a pic intermediate between the Asiatic pic and the polar cubit. But Ezekiel had pointed the distinction between linear and itinerary measures. It has been shown, too, that King David strongly emphasized the 240 division of the circle, that Posidonias probably recognized it, and St. John reasserted it.

The combined effect of conquest and migration was to bring these different systems into collision, and obscure the minds of men as to the ancient correlations. The work of Claudius Ptolemy, in the reign of Aurelius, seems, on the face of it, to have been an effort on the part of the Empire to harmonize metrics by re-establishing the Mosaic system. Everywhere, within and without the Empire, Hebrew and Oriental measures were in use. As one instance, Sardinia, Gaul and Greece had the Mosaic or Olympic mile. It was too late. The storm was gathering which was to send Cæsar after Belshazzar; and in the convulsions that followed, the people of Europe lost their learning, and with it all knowledge of the ancient correlations. It was retained in part among the Arabians.

The distribution of the polar cubit, with its countless analogues, is largely among peoples now recognized by some as the ten tribes. If that is so, the direction of Ezekiel to Judah and Benjamin may have been simply a re-assertion of its authority and value. For aught we know, it may, like the Mazzaroth and the Hours, antedate the deluge by countless centuries. But for all that, the appeal of the system to the majority of men must be on the score of convenience and fitness. The adjustment is so slight that it would probably be unwise for the American people to retain permanently the present inch. If the English choose to retain it, and to measure their land and local mile by the yard, that need not influence us.

We need not wait to ascertain the polar axis by further direct survey. Such work will have its future inestimable value. If we translate Clairant's theorem and the existing formulæ decimally upon the hour, with the best experimental constants known, the constant of gravity at mean latitude *in vacuo* is a decimal of the polar axis. If we are not seriously mistaken as to the polar length and the extent to which geodetic operations have verified, Clairant's hypothesis, the mean gravity constant for a current second of time is 32.1836 English feet, representing precisely a total descent of 100 polar cubits in one-thousandth of an hour. By the direct pendulum method, then, at simple positions, the standard can soon be fixed, and restored at any time, to the limit of practical admeasurement.

The pendulum length at mean latitude becomes

			POLAR CUBITS.		COSMIC INCHES.
For 10 ⁰⁰	of an hour	=	20.163472 +	=	506.60594 -
For 10 ⁰⁰	of an hour	=	1.563598	=	39.08995

For $\frac{1}{3600}$	of an hour	=	1.266515	=	31.66287
For $\frac{1}{86400}$	of an hour	=	0.562896	=	14.0724-

Sir William Thompson has shown that a variety of phenomena—the wave length of light, electrical vibrations and the like—are so cosmically related that they can be independently used for verifying the standard and for regulating time. Under the system here proposed the "radian" or analytical unit is $\frac{120}{\pi}$ instead of $\frac{180}{\pi}$; but the geometric degree becomes a simple unit expression for velocity.

JACOB M. CLARK.

NEW YORK, August, 1885.

METRIC SYSTEM PROPOSED BY MR. JACOB M. CLARK.

(ARRANGED FROM CORRESPONDENCE WITH THE COMMITTEE ON STANDARD TIME.)

Adjustment—Increase the English inch, and also the Arabian gauge or guz (= 25 English inches), each by its $\frac{1}{1000}$ part.

For the Arts: Inch decimally subdivided.

Denomination.	Metric Feet	
City, or Builders' chain,	100.	= 40 cubits = 5 rods = 4 perches. Value, = 83.416 + English feet.
" reed,	10.	= 4 cubits.
" foot,	1.	the natural foot.
" inch,	.1	= value, 1.001 English inches.

City lot = 30×120 feet = 12×48 cubits metric. 10,000 inches metric is the entire boundary of a square acre.

Engineering and Geodesy: Cubit decimally subdivided.

Denomination.	Metric Cubits.	
Earth's semi-axis (polar)	10,000,000.	Grand Unit for Astronomy and Geodesy.
Acre (side),	100.	Convenient length for steel tape-chain, value = 208.5416 + English feet.
Perch,	10.	Convenient length for base-bar, value = 20.854 + English feet.
Cubit,	1.	Unit for Engineering, leveling, etc., value 25.025 English inches.

Solid cubit, the measure of Engineering quantities.

Superficial acre of 10,000 square cubits contains 43.489 and $\frac{1}{100}$ square English feet, and differs from the English acre by $\frac{1}{2}$ of 1 per cent.

Adaptations for Rural and Commercial Purposes.

8 cubits = metric rod = 200 inches metric, for land, etc.

2 cubits = metric staff = 50 metric inches, for wood, etc. The metric cord = about $1\frac{1}{2}$ present cord.

Metric ell = 40 metric inches, for cloth, etc.

Circular Measure: Time, arc and angle measure.

Denomination.	Metric Degrees.	
Circle,	240.	The quadrant = 60 degrees metric.
Metric hour angle,	10.	The Zenn = 20 degrees metric.
" degree,	1.	= $1\frac{1}{2}$ current division.
" minute, or prime,	.1	
" second,	.01	
" third,	.001	

Geographic: Road and sea measure.

Denomination.	Metric Miles.	
<i>Mean</i> great circle,	24,000.	} terrestrial, upon radius of volume.
" degree,	100.	
" offing,	10.	
Metric mile,	1.	} Value=5,472 Eng. ft. = {
Metric stadium,	.1	
" road-chain,	.01	} = Stadium of Posidonias.
" fathom,	.001	
" span,	.0001	

The true Turkish mile, $\frac{1}{2}$ of ancient parasang. $\frac{1}{2}$ sum of Jewish mile and Sabbath day's journey.

= Knot-measure, glass $\frac{1}{100}$ of an hour.
 = Mast-length, the height from which the horizon appears 10 miles away.
 = $\frac{5}{8}$ Jewish civil cubits (Mosaic).
 = 0.2624 cubits = 6 and $\frac{1}{100}$ inches metric.

Metric furlong, or cable length = 125 fathoms.

(Kilometre of France = $\frac{1}{8}$ of metric mile, very nearly.)

8 furlongs, or
 10 stadia, or
 328 rods,
 2,624 cubits, or
 6,560 feet metric } = one mile and { $\frac{1}{8}$ mile = 41 rods.
 } furlong = 41 cubits.
 } stadium = 41 feet metric.

LETTER FROM C. PIAZZI SMYTH TO THE ANNUAL MEETING OF THE
 INTERNATIONAL INSTITUTE.

15 ROYAL TERRACE, EDINBURGH, October 27, 1885.

Dear Sir:—In reply to your invitation of the present month, and in the heartiest sympathy with your International Institute for Preserving and Perfecting Weights and Measures in its gallant resolve to do this year so eminently the right thing in the right place, I send you these few appreciating lines to greet you on the occasion.

And why "the right thing," and "the right place"?

The right thing because surely it is high time that the great Anglo-Saxon people of the whole earth should stand up for their ancient customs and heritages of antiquity; when we see that the spirit of these days calls so frequently for popular demonstrations of what is wanted to be made, done or altered, as to allow even infant states of seven years old along the course of the Danube, not only to rise for such purpose, but threaten to levy war and embroil all Europe and part of Asia; yet to draw thereby to themselves and their mushroom assumptions the solemn attention and respectful audience of the great ones of the political world.

Most surely, therefore, not a little attention is likely to be paid when the Anglo-Saxons of the western hemisphere arise, though in peaceable defence, and as accords with the Christian religion, in friendly yet firm feeling that they will not be robbed by strangers of those beloved weights and measures running through all their civilization, and forming that system of metrology which has descended to them from an antiquity before written history, and as they have lately learned to believe from Divine inspiration communicated soon after the dispersion of mankind.

Now, the presence and confession of this last feature will undoubtedly be the strength of your movement. For the modern, the dreadfully modern, French metrical system, which an oligarchical few in your country are seeking to impose in all the spirit of despotism on the many who are still loyal to the traditions of their race and form the bulk of your great republic, has no religion either in it or for it. And hence, as with all the attempted

movements of mankind throughout history, without religion to guide them, the course of the French metrical system will be found full of vacillations, changes, alterations oppressions of the poor by the rich, and in the end a failure after the loss of invaluable time and wasted opportunity.

But from the standpoint you have happily taken up, you can demonstrate to your countrymen that the Anglo-Saxon weights and measures of to-day, excepting some adventitious adulterations of the dark ages which may easily be swept away, come to you with a noble antiquity and an assurance of solidity of foundation for the future, because they have lasted through 4,000 years of the past—viz., from the Great Pyramid standing geographically in, but not psychically appertaining to, the land of Egypt. Nor can that mighty duration, four thousand years, be shortened by anyone; for if you apply to any of the modern Egyptologists, so-called, generally free-thinkers, evolutionists and French metrical schoolmen, they will tell you that the Great Pyramid is far older still than four thousand years; and it is in the sizes, shapes and unalterable positions of its most vital and internal monumentalizations in pure stone, necessarily the work of its founders and authors, who were the honored recipients of Divine inspiration, knowledge as in the Bible, that the coeval character of Anglo-Saxon metrology and Great Pyramid masonry has been claimed and proved.

And, secondly, why is New York the right place for the International Institute, so long confined to Cleveland, Ohio, to make its first great stand in the face of the whole world? Because New York is the head of the United States of America, and they again have become, or are year by year rapidly becoming, the gathering place and agglomeration of the greatest number of the most intellectually advanced and the most enterprising Anglo-Saxons in the world. The local habitation and authoritative abode, too, for the English language itself, because now spoken, written and read there in all its Shakesperian purity and biblical power by the greatest number of educated millions in any country whatever. While all the scientific improvements and economies of time in modern life, from astronomical observatories to telephones, and from trans-continental railways to sewing machines, are more widely appreciated, and have been more extensively invented in the United States than amongst any other people on the face of the globe.

Why, therefore, should the United States, especially when she has Great Britain to back her therein, come down from her high position, denude herself of her more than human metrological heritage; and, like the rabble of little godless states of yesterday's birth, without a language of their own, or a history worth anything, be cajoled by a few semi-foreigners to inflict on her people the adoption of the French weights and measures, perhaps the French language, too, in the end, at the peril of fine, imprisonment and the point of the bayonet as well.

But this branch of the argument has been, and still may be, further described and illustrated by others with far more power and more right to do so than I can possibly have. Let me, therefore, rather confine myself, if a few more words may be allowed me, to the latest news touching that monumental foundation in primeval history for the best and most encouraging part of our views, viz., the Great Pyramid, the subject of my particular study at home and abroad, in Egypt and in England, through the last twenty years.

Although the British government has been lately so wonderfully put by a superintending Providence into actual possession of all the land and people of Egypt, from the very year A. D. 1882, as indicated by the Great Pyramid itself prophetically from the oldest of human historical time, yet it is certainly very surprising that that government, whether politically composed of Whigs or Tories, Radicals or Conservatives, holds itself steadily aloof from taking any visible interest in that one sublime monument there, which sanctifies Anglo-Saxon metrology, confirms the whole course of the Christian religion through

the Old as well as the New Testaments, and announces, through its very stones crying out, some of the leading events of the present and future time.

But the minds of individuals, as my daily correspondence (too extensive for me to fully attend to as I would) testifies, are becoming more and more exercised about the Great Pyramid in its religious and historical, as well as metrological, bearings. Not, indeed, all of those letter-writers are in favor of these views, as some are for and others against, according in general to their amount of knowledge of the subject, combined with some secret of predestination of their souls, known to God alone. But all classes of students seem increasing in fervor, each on their own lines; and the attacks of the malcontents have sometimes been fierce and malignant to a degree, yet have they generally resulted in bringing out some additional testimony in favor of our *excelsior* views of the ancient building.

As to the latest and most striking example, I would allude to the author of a recently published London book, on that deeply interesting question to all earnest New Testament Christians—the expected rapture of the church, some years before the second advent of our Lord, and the beginning of his visible millennial kingdom on the earth.

From an author dealing favorably, Scripturally, religiously with such a subject, who would not have expected the best treatment for the Great Pyramid, which typifies so much of the very same sacred events? But no! the said author denounces it; and then we remember Christ's own words to the effect that His doctrines were not to produce peace, but variance, even between those of the same household.

On what authority, however, does the author in question venture to assert that the Great Pyramid is of Satan, and is a fearful example of the pits of perdition into which the unwary Christians may fall?

His supposed authority is most instructive, though not in the direction he intends. He works by Kabbalistic arithmetic, which none of the Pyramid examiners have ever found there, and by applying it in the following manner: Out of all the Pyramid's many numerically measured and carefully computed quantities of measure, he picks two, viz.: the supposed length from north end of grand gallery to the fiducial line in the entrance passage, and the length of the grand gallery from north to south wall as taken *through* the step, without regarding the other greater length taken *over* the same. Although the former length has been described as 2,170 and a fraction, in Pyramid inches, the author calls it 2,169 even; and although the latter has been equally described as 1881.6 (meaning August, 1862), he, at his study table, turns it into 1881. And then, by dealing Kabbalistically with these two numbers of his own felonious perpetration, viz.: 2,169, 1,881—viz.: by summing up their digits in appearance, sideways, he makes them each = 18; and 18 he says = $6 + 6 + 6$; wherefore, evidently to him, the building which contains them is of the Devil.

I have before me, at this moment, a large book with more than 2,500 pages, so that I could easily turn up a page numbered 2169 and another 1881. But would that circumstance annihilate all the other pages and all the information in the book, and prove it to have been concocted in the infernal regions for the destruction of human souls? I do not think so; and the book is, after all, simply a *Gazeteer*, and descriptive largely of new towns and villages of the United States. Moreover, the Biblical 666 of evil repute, under certain conditions, is not composed of three digits, which make eighteen when added together, but as St. John takes the trouble to inform us, it is "six hundred, three score and six," which in any honest arithmetic, or any admitted mode of paying one's debts, means something very different.

But the Great Pyramid is safer still from the Kabbalistic imputation, for the two measures taken by myself in 1865, which, within the limits of dishonest manipulation allowed to himself by the author, were brought to make up the Kabbalistic 18, were most fortunately remeasured by Mr. Flinders Petrie in his late attempt to invalidate the sacred

theory of the Great Pyramid, and were found to be in reality one of them nearly a unit and the other three whole units still larger than I had made them. Wherefore, the man who did not scruple to take one unit off an ancient number for a bad purpose, will yet hesitate before he ventures to abstract two, or three or four units, and consider himself justified before God.

Now, who would have thought, when Mr. Flinders Petrie's grand attack on the Pyramid was published so demonstratively and aggressively in New York and London on the same day, that it contained the most unexceptionable defence of the Great Pyramid against the Kabbalistic interpreter of the present year and his Satanic insinuations.

But thus it is that God causes even the wrath of man to praise him and testify to the holy purity of the one building on all the earth prepared from the beginning of the world, in order that it might become in the latter day, according to Isaiah, "a pillar and an altar unto the Lord."

If Great Britain still refuses to take possession of that primeval monument to Christianity in a land at present oppressed by Mohammedanism, will not the United States at last strike in and extend over it the shield of protection of her Pilgrim Fathers? And I remain, dear Mr. Latimer, in delighted admiration at the untiring manner in which you have been, year after year, working with all your might at this grand subject ever since you made acquaintance with it, your too weak fellow-worker,

C. PIAZZI SMYTH,
Astronomer Royal for Scotland.

"GREAT FISHES, ONE HUNDRED AND FIFTY AND THREE."

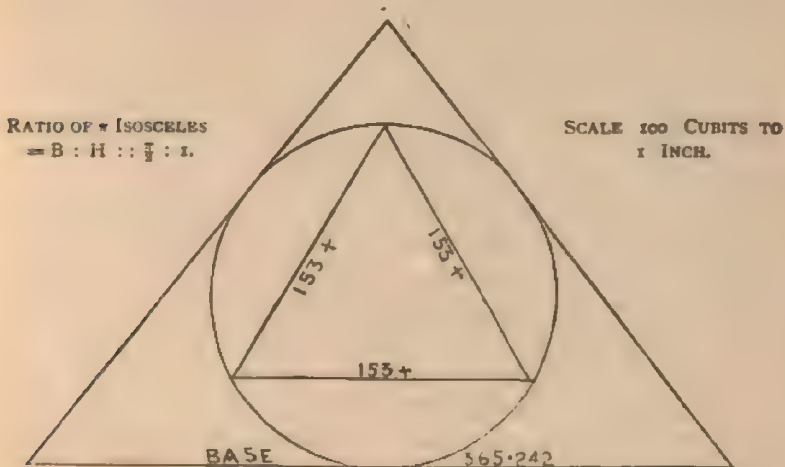
To the International Institute for Perfecting Weights and Measures:

If rightly I apprehend the business of your Institute, it is a sort of voice in the Wilderness, to make the crooked straight, to abolish chaos of sixes and sevens, and persuade men to the use of a "perfect and just measure;"—standards neither deteriorated by long ages of neglect, nor invented recklessly out of false refinements, but educed direct from the elementary functions of the kosmos. That is also part of the business of my life. As I cannot meet you face to face, you may be disposed to receive a written brief exposition of one of many cases, in which the elementary functions of the kosmos are interwoven in the Word of Him Who made the kosmos.;

If a man believe in God at all, and if at the same time he be instructed in mathematic, and the relations of the kosmos, he should know well enough that the work of God is absolute in exactitude and precision; and that the ultimate refinement of

human mathematic cannot reach the exactitude of the work of God. He should understand that the precision of the relations of the kosmos of God, is simply the expression of the perfect righteousness of God; and that the noblest use of mathematic is simply to help us to get a far-off apprehension of the infinite righteousness of God.

But, then, how about the book we call the Word of God? There be priests and parsons who go about to apologize for what they say is the Word of God; to explain with more or less unction, by I know not how many and contradictory interpretations, that it may be "reconciled" with the "advanced



science," such as it is, of this nineteenth century. That surely is very strange! Surely if the book be of God, it can need apology no more than the kosmos of God. If it be of God, it must be in precise accord with His kosmos. If it contradict the kosmos, it cannot be the Word of God. That would be to make God a liar. He cannot lie.

What happens is, that science is unspeakably arrogant, and has not yet arrived at the knowledge of its ignorance of the kosmos. On the other hand, we read the Scriptures by the murky light of commentators and traditions of the elders.

For the hundredth time, I declare this thesis.—

That, in the very nature of the case, if the Scriptures be of God, they must be *in advance of the most advanced human science.*

A hundred times I have demonstrated that the Scriptures are certainly from God, *because* they are far in advance of the most advanced human science; a hundred times shown that they teem with irrefragable, final, absolute mathematical proofs that they are the very Word of Him Whose hand made the kosmos. In the nature of the case it must be so. God can work conceivably no other way than in absolute exactitude, beyond the last decimal of recorded computation.

Voice in the Wilderness indeed, in the midst of a shallow and slipshod generation, to cry out that "He maketh a weight for the wind, yea, He meteth out the waters by measure," is not a figure of speech, but a fact; that the "very hairs of our head are all counted" is not a metaphor, but a fact;—must, in the nature of the case, be so, if there be God at all.

Seven years ago, I showed that the recorded measures of the Tabernacle and the Temple form a system representative of the elementary kosmic quantities, founded on the earth's polar axis, and its mean density (which is 5.7 *exactly*, with no further decimal); and that the sacred cube of the Holiest is the expression at once of the Earth's volume to the last cube cubit, and of its weight to the last ton.

So now let us consider what we mathematical people call a "particular case" where, under the veil of a quantity that seems at first sight to be the measure of no known thing in the heavens, the earth, or the waters beneath, we find a function of the three elements of the kosmos which for us on the Earth are fundamental, to-wit, the ratio π , the time of the Earth's revolution round the sun, and its distance from the sun. These for us are fundamental, because they are the basis of all planetary and stellar computations.

There is a wondrous draught of fishes recorded by Luke. The fishermen had toiled through the weary night, and caught nothing. Then came Jesus, the Christ of God, who made both fishermen and fishes. At His word they run out the nets

again. When they hauled home, the nets were so full that they broke. Make note of this—that *they broke*. They were so many that the two craft they filled began to sink with the weight. The men were astonished. Well might they be. This was before the men, Peter and his comrades, were called to their apostolic office. That was why their nets broke. When the matter was ended, they received their apostolic mandate. Jesus said to them, "Henceforth ye shall be fishers of *men*." So then, by this act and mandate, the fishes were constituted types of men. That is the point to keep in mind.

A second wondrous draught of fishes is recorded by John. This happened after the rising from the dead of Jesus the Christ of God, who then had conquered Death and Hades. Peter and the rest had seen Him put to death, a shameful death; and concluded that there was an end of that business. They went back to their fishing. They toiled again through the weary sad night, but caught nothing. Again came He who made both them and the sea, and the harvest of it. He without Whom there was not anything made that was made, and commanded to cast the net on the *right* side, the *right* side, remember, of the ship. So full was the net that they could not haul it home. But a second time they hauled, and brought it ashore. But for all the haul of fish, the net this time was *not* broken. Of course not. And there were of

Great Fishes One Hundred and Fifty and Three.

Observe particularly that the small fishes were so many that we are not told their number. Thus we have an integral quantity, with an indeterminate interminable decimal remainder.

Why are we told the number of Great Fishes? Why is the number 153 plus a remainder that no man can compute? This is not a big territory, this of Britain; but I have asked these two questions of all the priests and the scribes that I could lay hands on between Wick and Wight, and can get no answer.

The first answer to both questions comes from your side of the sea that is the only thing that divides us. The Hebrew letters, as the Greek, served also as numerals. By transnumerating words of the Hebrew Scriptures, as also of the Greek,—that is by taking the sum of the numbers which the

letters of the word represent,—we arrive at quantities whose significance is startling. For example, the first two words of Genesis, *B'reshith*, "In the Beginning," give 913, the days of a quarter of the Earth's revolution round the sun; and the initial figures of the length of the base of the Great Pyramid. If the Gospel of John, in which the draught of fishes is related, be read in Hebrew, it also will begin with *B'reshith* = 913, which is the initial quantity of all kosmic quantities.

Similarly, we may find the Hebrew words which correspond to a given number. One of your citizens has found that the words represented by 153 are *Beni k' Alehim*, Sons of God. Jesus, whom the common people heard gladly, spoke the vernacular of the people, the Aramaic, or lower Hebrew. At the first draught of fishes, He had constituted them types of men in general. He then constituted the catchers to be fishers of men. In the second draught, He makes the number of great fishes 153 to signify that the net of His Gospel, cast on the *right* side of the ship, shall bring an innumerable company to get power to become *Beni k' Alehim*, Sons of God, by believing on His Name. That net cannot break, however full it be. This is the first, and paramount, answer to the questions why we are told the number, and why the number is so.

The second answer demonstrated that He Who made the kosmos, also gave the Word which rightly we call the Word of God; since no man, nor angel, can conceivably have had the knowledge of the exact kosmic quantities involved, nor the wondrous skill to convey them by an expedient at once so simple, yet covering a vast area of computations whose boundaries Science has not yet determined, nor is ever likely to precisely determine.

There is a certain triangle, which I call the π Isosceles, because its base is to its height as $\frac{\pi}{2}$ is to 1. If such a triangle be constructed with a base of 365.242, the number of days in a solar year, its height will be the index of the precise mean radius (not "nearly" or "about") of the Earth's orbit, or its mean distance from the sun. A triangle of these dimensions is a right section of the Great Pyramid through its vertical axis. If then a circle be inscribed touching the isosceles sides

and the base; and, lastly, an equilateral triangle inscribed in the circle, the length of each side of the equilateral triangle is 153, plus an indeterminate and interminable decimal; as all functions of π necessarily have. Obviously, then, 153+ is a function of the three fundamental elements of the kosmos, to wit: π , solar year, and sun's distance. That is easily proven. But the words were closed up and sealed until the time of the end. There is, however, nothing said that shall not be revealed.

The word *Alehim* (there is no such word as "*Elohim*") as also other names of the Most High God in the Hebrew text, is plural, to express the Holy and Undivided Trinity. Which Trinity is also absolutely in the nature of the case. Now, every man knows that, since time was, the Trinity of the Supreme is the heart of all creeds; and that the equilateral triangle is always and everywhere the symbol of the Trinity. So then, we have *Beni h' Alehim* thrice repeated in the three-fold repetition in this particular equilateral triangle of the 153, plus the interminable decimal, representing the innumerable host hereafter to become sons of the Father in His Son by the power of His spirit.

We are to remember that this is written in the Gospel by John, which begins "In the beginning," B' *reshith*, 913, the initial quantity of all kosmic quantities. John was specially instructed for us in factors of length and factors of time. To him was given a reed to measure the temple of God. His Apocalypse sparkles with fundamental factors.

I reckon, then, we cannot go wrong in holding fast by the measures founded in the kosmos, given by Him Who made the kosmos, in His Word which precisely at all points accords with the kosmos (which thesis I will argue against all comers).

There is the mathematic of God. That is kosmos, order, unbroken and absolute. But also there is a mathematic of the devil (and the devil is not a myth, I tell you). That is chaos, disorder, broken and absolute; nevertheless very specious, insidious, not to say fascinating. Well, I have been doing little else for about forty years than measuring things, from the gauge of a screw to the distance of Neptune from the sun (which I found within a handful of miles); and I find it easier

to work with the measures given by God than with the "metres" given of the devil.

The salutations of the Most High God be upon you, and prosper you.

W. J. COCKBURN-MUIR.

Melrose, Scotland, 22nd October, 1885.

LETTERS.

LETTER FROM JOHN N. STOCKWELL.

1008 CASE AVENUE, CLEVELAND, November 7, 1885.

My Dear Sir:—In reply to your postal of the fifth, I would say that I find the length of the tropical year, B. C. 2170, was 365 days, 5 hours, 49 minutes, 7.26 seconds, or just 20.00 seconds longer than at present.

Truly yours,

JOHN N. STOCKWELL.

LETTER FROM COLONEL A. T. FRASER.

BELLARY, November 17, 1885.

My Dear Sir:—I received your letter of the 10th ult., and was glad to find that my communication of C. Iyer's pamphlet had excited so much interest. The reference to the lost star Revati was new to me, and attracted my attention.

Unfortunately it is extremely difficult to get from Indian natives precise information on such questions. Partly because of those who possess most not knowing English, and a peculiar indefiniteness in their scientific training which is not favorable to accurate thinking.

I have sent your letter to C. Iyer as it stood, through the native friend of his who had first shown me the pamphlet, and recommended he should send his reply to you at Cleveland direct, and I posted the *Plain Dealer* to C. Iyer himself. He has taken a B. A. degree at the Madras University, and is, I believe, a pensioned government servant, living in Madura.

The curious power that natives assert some of them have come to my notice almost simultaneously with 'Sinnott's Occult World,' Bentley, London.

I happen to have known Mr. Sinnott at Allahabad in 1872, when he was editor of the *Pioneer*, one of the principal Indian daily newspapers, and knew him to be the least liable to be duped of anyone of my acquaintance, or to arrive at hasty conclusions. The same opinions I had heard were held by Mr. Hume, home secretary to the government of India.

It appears that Madame Blavatzky, who is well known in America, somehow came across the Anchorites, who are reputed to live in the Himalayas, and some of them showed her how they could move incorporeally, and write letters at any distance. Colonel Olcott then established a society, now at Madras, and which took among the natives, who thought that by means of it they would find how Brahmans kept them in thralldom. I went to see Colonel Olcott a day. I was in Madras in April, and had a long conversation

on the possibility of the transference of matter, and some of the subjects treated in my pamphlet, 'Darkness in Egypt,' etc. He said a Mahatma appeared to him in New York; that the real man was not there, that is he would have been found where he always lived, but the turban he threw and left on the table was substantial and actually conveyed.

I mentioned the difficulty in getting explanations from natives, at which he laughed. The fact is that we Europeans never see or come in contact with the really influential natives, who are this from having these powers, and it is only a few natives who even know their whereabouts. I did my utmost to get an example of the movement of distant matter, but was always put off with excuses. However, I was able to test the reality of their being able to see to a distance, and in a black composition given me was able to see enough myself to convince me the phenomenon was genuine. In consequence I was thrown back on a priori investigation, and rewrote and enlarged my pamphlet 'Darkness in the Land,' etc., which I heard by last mail has just been published in London as a second edition. In it there is an entirely new theory, accounting for seeing to a distance by electrical images.

You will get a copy of my other pamphlet. I have had an interesting correspondence with Mr. Courtenay on the subject of the Mosque of Omar being Constantine's Church of Anastasis I, and I almost think he is now inclined to maintain it is.

I am yours sincerely,

A. T. FRASER.

LETTER FROM LIEUT. C. A. L. TOTTEN.

GARDEN CITY, November 29, 1885.

Dear Sir:—I send you a clip from a newspaper which it would be well to publish for safe-keeping in the Magazine. Our meeting in New York was very enjoyable, and I trust will in time be productive of good results.

There is a circumstance connected with the burning of the Parliament building, or Palace of Westminster, London, half a century ago (October 15, 1834), which connects the present with the past in a curious way. At the time of the Norman conquest, 1066, the tally system of keeping accounts was introduced into England. It derived the name from the French word *tailleur*, which means to cut, the tally-sticks being notched with a knife; small notches representing pence, the large shillings, and the largest pounds. These sticks were square rods of hazel or alder, split longitudinally, so as to divide the notch marks, one-half of the sticks being laid away in the exchequer strong-room, and the other given to the creditor of the government. To prove the account when presented for payment the two halves were laid together to see if they tallied. English conservatism kept this cumbersome method of keeping accounts in vogue for more than five hundred years after the introduction of the Arabian numerals into England, about 1253. A. D. It was not until 1823 that it was finally determined to put an end to it. The question how to best dispose of the terrific pile of sticks, which had accumulated in those centuries, then arose, and it was not until 1834 that it was finally determined to burn them in a stove in the House of Lords. The burning was more effectually accomplished than was expected. From the stove the wainscoting of the House of Lords was set on fire, the fire spread to the House of Commons, and both were burnt to the ground—a grand funeral pile.

EXTRACT OF LETTER FROM C. PIAZZI SMYTH.

15 ROYAL TERRACE, EDINBURGH, December 14, 1884.

My Dear Sir:—That you have got Professor Stockwell to calculate the exact length of the solar year in B. C. 2170, is an excellent step, and I hope you will publish it with all necessary particulars—the final result, if you like, in letters of gold.

Some of your computations with that quantity will doubtless be important, and I must not damp your ardor, because I have not got a gift that way, but somehow I should like

to see a plain reasoning reason why the coffer's bottom should bear on the recondite questions of the earth's size and shape before going into the deductions of far larger fractions than the probable end of the measures will warrant. But, as I have said, I have not an aptitude for that most ingenious kind of calculation, while I verily believe Mr. James Simpson has, therefore I shall have great pleasure in forwarding your letter to him this evening.

But this very day behold a new man has started up, because apparently predestined to be one of the witnesses for the truth and the objects of the Great Pyramid. This person is Rev. C. Wotruba, C. M., Professor of Physics and Mathematics, Collegio de S. Quiteria, Felgueiros, Portugal.

He begins his letter by asking where he can get a copy of 'Our Inheritance in the Great Pyramid.' He has seen notices of it in various scientific journals, and though they are usually abusive is not deterred thereby.

Of 'La Nature,' of Paris, of November 28, he says: "It is pretty angry on yourself, because you do not want to have the millimetric system adopted in England and the United States." Only think of the honor done my poor efforts to be denounced in Paris for being true to my country and "to the United States!"

And Professor Wotruba bears this further testimony, saying of himself: "I spent four years (1879-83) in the United States, and I never could see any reason for such a fundamental change as the bringing in upon an Anglo-Saxon community of the French metricals, as I found the English system of weights and measures quite handy."

My wife appreciates your continued true-heartedness in the cause as well as I do, and I remain,

Yours truly,

C. PIAZZI SMYTH.

TRANSACTIONS OF THE OHIO AUXILIARY SOCIETY OF THE INTERNATIONAL INSTITUTE

SEPTEMBER 23, 1885.

Judge J. T. Bernard, of Tallahassee, Florida; Charles Ferguson Garland, Nelson Plain, Australia; J. G. Gray, Medina, O.; R. B. Murray, Youngstown, O.; Edward G. Tyrell, Kingstown, Jamaica; Robert W. Watson, Indianapolis, Indiana; Leo S. Weil, Bradford, Pa., were elected members.

Letters were read from Rev. H. G. Wood, Jacob M. Clark and Thomas Bassnett. A paper by the latter was read and discussed.

DECEMBER 30, 1885.

Samuel Griffith, of Mercer, Penn., was elected a member.

The president announced the death of Mr. George Boyce, of Sharon, Penn., a valued member. Mr. and Mrs. A. M. Searles were requested to prepare an obituary notice of the late George C. Davies.

A letter was read from Colonel A. T. Fraser, of Bellary, India, with reference to the extraordinary power possessed by some native astronomers and philosophers.

The subject, "Are the Anglo-Saxon Measures found in the Great Pyramid, and does it Contain a Divine Revelation," was then taken up, the affirmative by Mr. Latimer, the negative by Mr. W. E. Bond.

Owing to the lateness of the hour at the close of the argument it was decided to continue the discussion at the next meeting.

OCTOBER 7, 1885.

Rev. H. G. Wood gave an address on the cabalistic use of numbers.

Mr. Latimer directed the attention of the members to the monetary conference in France, to assemble on the twelfth of the month.

A letter was read from Mr. J. N. Wing with reference to the annual convention in New York. Extracts were read from a pamphlet by a Hindu astronomer. The president acknowledged the receipt of a pamphlet, "Origin of the Stars and Stripes," sent to the society by Mr. Will M. Clemens.

At the close of the meeting Prof. N. B. Wood exhibited through the microscope the markings of the standard bar prepared for the society by Prof. Rogers, of Cambridge.

OCTOBER 21, 1885.

Rev. J. Swinburne Whedon of New York, and Charles P. Fisher of Waubausbene, Ont., were elected members.

Communications from members were read, after which a collection of precious relics from Egypt were exhibited.

Dr. Redfield then read a paper on "The Uses of the Great Pyramid."

NOVEMBER 4, 1885.

Beriah Magoffin was elected a member.

Final arrangements were made for the sixth annual convention of the International Institute.

Letters were read from Mr. Joseph Baxendell, astronomer, England; Professor Bassnett, Jacksonville, Fla., and Samuel Beswick, C. E., Strathroy, Ont. The President acknowledged the receipt of a book from Professor Bassnett, "The True Theory of the Sun Distance."

NOVEMBER 9, 1885.

A special meeting was held at noon, Monday, November 9, for the election of officers of the Ohio Auxiliary branch of the International Institute. Charles Latimer was elected President, A. M. Searles Vice-President, and Mary B. Sanford Secretary and Treasurer.

NOVEMBER 18, 1885.

The meeting was small, and after a brief discussion was adjourned without accomplishing any special business.

DECEMBER 2, 1885.

Miss G. Kendall, New York; George H. Taylor, Sharon, Pa.; Samuel Tucker, Elizabeth, New Jersey, and Professor Ferdinando Borsari, Naples, Italy, were elected members.

A letter was read announcing the death of Lucian I. Bisbee, formerly secretary of the International Institute here. The president spoke of Mr. Bisbee's earnest and faithful discharge of his duties, and of his unfailing interest in the welfare of the society during his last illness. Other members paid feeling tribute to his memory and resolutions of regret for his loss were passed.

Several interesting communications were then read. Professor Piazzi Smyth gave an abstract of Mr. Gladstone's paper in the 'Nineteenth Century Magazine, entitled, "The Dawn of Creation and Religious Thought." Rev. H. G. Wood sent a criticism upon Mr. Samuel Beswick's paper, "The Sacred Cubit." Mr. G. A. Hammond, of Kingsclear, N. B., contributed an original poem, and J. R. Bryden, C. E., of Demerara, British Guiana, wrote upon the Identity question. Professor Ferdinando Borsari, of Naples, Italy, editor of a geographical review, expressed a desire to establish a corresponding membership in Italy.

DECEMBER 16, 1885.

J. H. Shumard, of Youngstown, and H. G. E. De St. Dalmas, of Poona, India, were elected members.

Mr. De St. Dalmas contributed a paper on "The Testimony of the Great Pyramid to the Date of the Dispersion." With reference to this paper a discussion took place upon the time passage theory of the Great Pyramid and the casing stones. A letter was read from Mrs. S. W. Libby, of West Minot, Maine, giving particulars of the death of the late Lucian I. Bisbee, formerly secretary of the Institute. Letters were also read from Rev. H. G. Wood and Samuel Beswick.

The president then announced the death of Mr. George C. Davies, the second secretary of the Ohio branch of the International Institute, and spoke of the valuable contributions of Mr. Davies to the literature of the Institute and of his interest in its work.

Mr. Latimer then gave upon the blackboard some illustrations of the time passage theory, after which a discussion took place with regard to the subject for the meeting on December 30. It was finally decided that it should be, "Are the Anglo-Saxon Measures found in the Great Pyramid, and does it Contain a Divine Revelation?" Members were requested to prepare papers on this subject.

RECEIPTS FROM SUBSCRIBERS TO THE INTERNATIONAL STANDARD FROM OCTOBER 1 TO DECEMBER 31.

October.—Miss Augusta Barr, \$2; Mrs. Eunice Finch, \$2; Mrs. Angie Damon, \$10; J. K. Hornish, \$2; Samuel Andrews, \$2; Samuel Goodsell, \$2; Charles P. Fisher, \$2; Rev. J. S. Whedon, \$2; Mrs. Emmet Austin, \$2; J. Wylie Smith, \$2; C. Schoenhut, \$2; S. McElroy, \$2; Cleveland News Company, magazines sold, \$8.95; Mrs. E. B. Benjamin, \$7; Joseph Wild, \$2; A. M. Tucker, \$2. Total, \$51.95.

November.—Charles E. Bliven, \$4; John Tod, \$2; Robert McCurdy, \$5; George Leach, \$3; G. A. Hammond, \$5; J. H. Shumard, \$2.09; Jesse Fosdick, \$2; Samuel Tucker, \$2; George H. Taylor, \$2; C. F. Coburn, \$2; Miss G. Kendall, \$2. Total, \$31.

December.—B. Magoffin, \$5; J. L. Dampier, \$4; William Archer, \$2; T. B. Mills, \$3; Thomas Basnett, \$2; Mrs. Mary S. Bradford, \$2; Miss M. D. Campbell, \$2; A. V. Benoit, \$2; Samuel Griffith, \$2; J. G. Gray, \$2. Total, \$26.

TREASURER'S REPORT.

TWELVE MONTHS ENDING NOVEMBER 8, 1885.

Receipts from subscribers, members' dues, and donations.....	\$ 767 43
From Charles Latimer—Witch Hazel Mine and private account.	1,361 77
Balance last statement	27 28
	<hr/>
	\$2,156 48

COMPARATIVE STATEMENT.

CASH ACCOUNT—NOVEMBER 8, 1879, TO NOVEMBER 8, 1885.

1879—1880.	
Receipts, estimated.....	\$1,000 00
Disbursements, estimated	1,000 00
Balance on hand November 8, 1880.....	\$0.000 00
1880—1881.	
Receipts.....	\$3,287 76
Disbursements.....	2,326 39
Balance November 8, 1881	961 37
1881—1882.	
Receipts.....	\$ 761 34
Balance last statement.....	961 37
	<hr/>
Disbursements.....	1,722 71
	1,636 85
Balance November 8, 1882.....	\$85 87
1882—1883.	
Balance last statement.....	\$ 85 87
Receipts.....	2,298 79
	<hr/>
Disbursements	\$2,384 66
	2,341 90
Balance November 8, 1883.....	42 76
1883—1884.	
Balance last statement.....	\$ 42 76
Receipts.....	2,975 60
	<hr/>
Disbursements	\$3,018 36
	2,991 08
Balance November 8, 1884.....	27 28
1884—1885.	
Balance last statement.....	\$ 27 28
Receipts.....	2,129 20
	<hr/>
Disbursements.....	\$2,156 48
	2,154 83
Balance November 8, 1885.....	1 65

SUMMARY.

SIX YEARS ENDING NOVEMBER 8, 1885.

Receipts.....	\$12,452 69
Disbursements	12,451 04
	<hr/>
Balance November 8, 1885.....	\$1 65

FATHER OF ISRAEL, WHOSE WORD.

Father of Israel! whose word
Worlds—even the worlds unformed—have heard
In the rich missive from whose throne
The wondrous future is made known.

God—only puissant—the High,
Whose foot-mark is immensity;
Throned in the cycles beyond time,
Crowned with infinitudes sublime.

Camped in the light beyond all dream,
Girt with all magnitudes supreme;
Creator of all marvellous things;
Saviour—from whom all bounty springs.

Oh, bow thine ear and bend thine eye!
Scain Israel's lack, hear Judah's cry!
Thy chosen tribes, all outcast yet,
Their princely origin forget.

Even Judah knows not in his need
The priest who for his life must plead;
And Israel slights, discredits yet,
The glowing words before him set.

And neither of the twain can see
Their grand approaching jubilee,
When silver trumps and rapturous peals
Cite the roused earth to Him who heals.

Mercy and truth to God belong,
All state, all triumph, every song;
And Israel and Judah yet
Their shame and bondage will forget.

Oh, mountains! trampled down so long,
Revive with fruits, and ring with song,
In largess like the hills above,
Replete with grace, becalmed in love.

G. A. HAMMOND.

KINGSCLEAR, N. B., CANADA.

EDITORIAL NOTES.

We have on hand a large number of able papers and interesting letters which are reserved for a future issue.

We have still several bound volumes of the magazine for 1883, and several hundred copies of all the back numbers for 1884 and 1885. These can be bound for persons desiring them, or sent unbound if preferred.

We hear from friends in Canada that Mr. Edward Hine's work has met with gratifying success. He lectures daily and to large audiences, and has engagements for several months in advance. We have seen several complimentary notices in the Canadian press, and congratulate him on the success of his mission.

In this last magazine of the year we appeal to the earnest workers and sustainers of "The International Institute," to aid us in printing it this year. So far the burden of meeting all deficiencies has been borne by one. This has been done cheerfully, without hope of reward. Those who are imbued with the truths that we are advocating, feel that it is important to the cause that the magazine should be sustained. Many literary men have assured us that it is second to none in the amount of original and instructive matter that it publishes. If one hundred members would each give ten dollars per annum it would insure the publication of the magazine. There is no failure of matter, many valuable papers are waiting for publication. We are grateful to those who responded so liberally to our appeal for aid last year, and we beg those who have not hitherto helped us to do what they can. We trust that there

is life enough and money enough in the Society to continue the publication, but whether the magazine lives or dies the Society remains. Its permanence is a necessity. Let the members not be discouraged, but hold fast as an organization under all circumstances and through all vicissitudes. The membership fee is the same whether the magazine is published or not, and ought to be religiously paid, as we believe the Society is the nucleus of a great organization, and that its work is divinely appointed.

338 Cedar Avenue, December 31, 1885.

My Dear Sir:—I have long been anxious to pay something on my dues to the Antimetric Society, and for the INTERNATIONAL STANDARD, which, in my judgment, is one of the most valuable publications of the day, and for which I am indebted to your kindness. My Christmas remembrances enable me to send the enclosed five dollars, which please accept. Wishing you a Happy New Year,

I am, truly and gratefully, your sincere friend,

JAMES A. BOLLES.

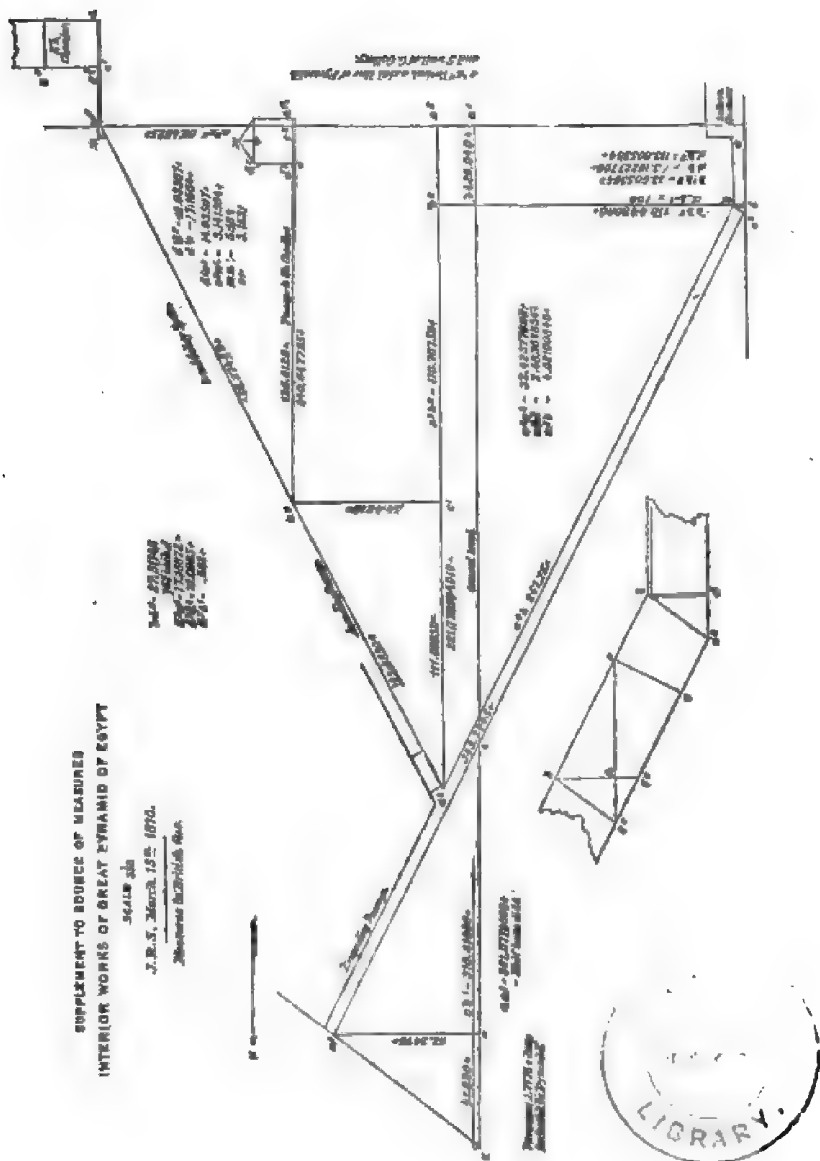
We present in this number a diagram giving the measures of the Great Pyramid. It is taken from a work by Mr. J. Ralston Skinner of Cincinnati, entitled 'Crown Jewels of the Nations,' a supplement to 'Source of Measures.' We desire to call the attention of our readers particularly to these books because they so clearly show the British inch to be the foundation of the system of measures of the Great Pyramid, the measures which have been apparently miraculously preserved and transmitted through the Anglo-Saxon race.

Many Pyramid measurers claim that there is also a Pyramid inch which exceeds the British inch by one-thousandth. Mr. Skinner has always maintained that the British inch was the true measure.

If there is a Pyramid inch agreeing with the solar time measures, there must be a difference every year, as the solar year varies. According to Prof. Stockwell, this solar year 2170 B. C. was 365 days, 5 hours, 49 minutes, 7.26 seconds or 20 seconds longer than the present. Now, if we say that the Pyramid inch agrees with the solar period as it was 2170 B. C., it would not agree now with our solar year, therefore we must have some fixed unalterable measure from which to count. If it be the polar axis, will

**SUPPLEMENT TO SOURCE OF MEASURES
INTERIOR WORKS OF GREAT PYRAMID OF EGYPT**

SCALE 3/4
J. R. S., March 15th 1874.
Messrs. the British Gas



1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

that polar axis always agree to the remotest fraction with the solar time? Prof. Stockwell asks "Why not take the sidereal year which is fixed, being by latest observations of Hanson 365.2563582?" Who will answer?

We pass these questions for the present and give the diagram of Mr. Skinner for the purpose of eliciting discussion and of giving credit where credit is due for the discovery of the main important fact that the British measures fit with the measures of the Pyramid and are correlated with the circle of 360. There is one important point which is to be specially noted, namely, that although Mr. Skinner does not deny that the southeast socket is the terminal point of the base of the Pyramid, yet he maintains that there is also a base indicated which is represented by 2400 divided by π for feet, which would give the base length of Howard Vyse of about 9168 inches. The measures of Petrie make the base length of the S. E. socket 9139.871258, while Mr. Skinner's measures in inches give 9167.32 at the lower level. Of course this would be proportional and near to the other with the same slope of the Pyramid. It is for pyramid students to compare the Pyramid chart and Mr. Skinner's diagram in British inches with subsequent discoveries to ascertain if it is possible for the base of the Pyramid to extend below the southeast socket. Whatever may be the conclusion in relation to that, the fact remains indisputable that the measures of the Pyramid given by Piazzi Smyth and by all other reliable measurers fit completely with the British measures in correlation with the circle of 360. The Pyramid chart published by the society was drawn by the advice of Mr. Skinner, to prove that the British measures were those primarily used by the architect, and we reproduce it here on smaller scale.

He does not deny the existence of the Pyramid inch, but insists that the British measures were the foundation. Without his discovery we should yet have been groping in the dark. Nevertheless there is a Pyramid inch agreeing with time and sacred chronology and the British measures. 1

OBITUARY.

LUCIAN IRA BISBEE.

Lucian I. Bisbee was born in Rutland, Vermont, February 6, 1807, at nine o'clock in the morning; was baptized in the Episcopal Church March 9, 1817, died at West Minot, Maine, November 24, 9:30 in the morning. He was connected with the International Institute for Preserving and Perfecting Weights and Measures from its organization. In 1879, while Mr. Charles Latimer was engaged in Cleveland in forming a society to investigate this subject, he received a letter from Mr. Bisbee stating that he had written to Prof. C. Piazzi Smyth, suggesting that a society should be formed in the United States for the purpose of preserving Anglo-Saxon weights and measures, and that Prof. Smyth had advised him to apply to Mr. Latimer. It was agreed they should meet in Boston and talk over the matter. Three persons, Lucian I. Bisbee, G. M. Hardy and Charles Latimer met, and sustained by the promise of assistance from a number of others, they entered into a compact to form a society. The result was a meeting in the Old South Church at Boston, on the eighth day of November, at noon, 1879, where a constitution and governing laws were adopted, under which the society was organized. The Old South Church was chosen for the meeting on account of its wonderful history, and because it contained the picture of "The Stars and Stripes and the Magi."

The formation of a society with so small a beginning would have appeared to some a source of discouragement, but the exaltation of Mr. Bisbee's mind partook of the character of inspiration, and his enthusiasm never flagged. He watched its growth with the most intense interest; he had a firm conviction that the work was divine and would be a source of great good to humanity. He remained a short time in Boston, then returned to Cleveland, where he was elected secretary of The Inter-

national Institute. In October, 1882, on account of failing health, he returned to Boston. He held the position of Secretary of the International Institute till November, 1884. As his ill health would no longer permit him to take an active part in the work, he then left Boston and was made Vice-President of the Institute. The friend who wrote of his last hours said: "His love and anxiety for the success of his Society kept him above almost all suffering." Mr. Bisbee had remarkable artistic talent. He painted full-length portraits of Calhoun, Clay, Webster, Polk, Cass and other prominent men, which were pronounced excellent likenesses by the gentlemen who sat for him. He was also very successful in painting allegorical subjects. Though the announcement of his death was not unexpected, it was received with deep sorrow by his many friends in the Institute, and resolutions of regret were passed by the members.

GEORGE C. DAVIES.

Died, on the sixteenth day of December, 1885, in the city of Cleveland, George C. Davies, an active and earnest member of the Ohio Auxiliary Society of the International Institute for the Preservation and Perfection of Anglo-Saxon Weights and Measures.

Mr. Davies was born at Trenton Falls, New York, on the fifth day of September, 1813, and was therefore seventy-two years of age at the time of his decease.

In 1833 he came to Cleveland and engaged in business with his elder brother.

In 1844 he removed to Cincinnati, and for nearly twenty years was engaged in the insurance business, attaining an enviable reputation as a business man among all classes of his fellow-citizens.

In 1862, during the late war, he removed to Dayton, Ohio, for the purpose of engaging in the manufacture of textile fabrics from flax, as a substitute for cotton goods, which had become of such fabulous value as almost to exclude them from

use for common purposes. The process by which this was accomplished was an invention of his own, and consisted in reducing the fiber of the flax to a homogeneous condition, much like that of cotton, and spinning and weaving it in a similar way. The product was called *eoline*. The enterprise was successful until the close of the war, and the consequent reduction of the value of cotton.

Subsequently Mr. Davies organized the Dayton Screw Company, of which he was the responsible manager. This would doubtless have been a successful enterprise but for the failure of a prominent and principal stockholder, who carried the company with him into bankruptcy.

During his residence in Dayton, Mr. Davies married an accomplished daughter of the late Hon. Peter Odlin, one of the most popular and useful citizens of his time in that city.

In 1879 he returned to Cleveland, and for a time was connected with a business journal as its editor, but relinquished this calling to engage in the manufacture of a valuable device in the way of a safety lock, of which he was the inventor. For the want of the requisite capital this pursuit failed him, and from that time onward all his efforts to secure a comfortable living were thwarted and unsuccessful. Mr. Davies was a man of great mechanical genius, and to him the recognition of an existing necessity was his only required inspiration by which to achieve and demonstrate the needed remedy, and, under more favorable circumstances, from this source alone he should have acquired fortune. His literary abilities were also of a high order, and his perfect familiarity with the history of the world rendered him an enviable companion in all social circles. Mr. Davies was a member of the Episcopal church, and attested his faith in the Christian religion in his life and death alike.

As a member of the Ohio Auxiliary Society of the International Institute, he allied himself to the affectionate regard of all his fellow members; and his numerous printed papers on the topics suggested by the study of its objects, furnish the most conclusive proofs of his interest in, and devotion to, the cause it aimed to promote. His future membership mourn his

loss, and by proper action have expressed their appreciation of his character and works, and hereby extend their sincere sympathy to his bereaved widow and fatherless children.

A. M. S.

REVIEWS.

OUR PLACE IN HISTORY. A lecture delivered in Poona, India, before the Young Men's Christian Association, by H. G. E. De St. Dalmas. Published in pamphlet form, thirty-six pages. Price sixpence. London, England. R. Banks & Son, Racquet Court, Fleet Street, E. C.

The author in his introduction says: "I purpose to trace the history of the world from the creation of man, step by step, from one period to another, till we meet with some historical event, the date of which is universally received. If, pursuing this plan, we can effect a junction by and by of the A. M. and B. C. dates, it will enable us, by adding these two together with our present A. D. date, to ascertain the number of years that have elapsed since the first appearance of man upon the earth, and thus to fix *our own place in history*." With regard to the first appearance of man on the earth, he enquires: "How long is it since the creation of Adam? Was Adam the first man? Are all the inhabitants of the earth his descendants?" He argues that in Adam we have the beginning of human history, that he was the sole head of the human race, first of all, and Noah afterwards at the Deluge, and that the flood was universal. He reviews the periods of ancient history in connection with the chronologies of the Hebrew and Septuagint Scriptures, the Samaritan Pentateuch and the testimony of the Great Pyramid.

"The earliest *point of contact* between the Bible history and the annals of the nations, is given by an inscription in the palace temple of Karnak, relating to the exploits of Sheshonk, or Sesonchis, king of Egypt—the Shishak of Scripture." From his study of the varying chronologies, the author believes 7473 to be the total period of human history. He says this is a far longer time than the most ancient of the nations can boast with

any show of historic exactitude. He gives the following summary of results :

Periods.—From Adam to the Deluge, 2256 years; Deluge to the Dispersion, 400; Dispersion to call of Abraham, 777; Abraham's migration to the Exodus, 615; Exodus to the Temple building, 480; Solomon's reign, 80; Rehoboam's reign to Shishak's invasion, 5; Invasion of Judah to before Christ, 975. Total from Creation to before Christ, 5588. Total from Adam to the present time, 7473 years. The book is remarkably clear and concise, and we recommend it to the attention of our readers.

We have just received from Lt. Col. A. T. Fraser a pamphlet of sixty-three pages, 'An Historical Review of the Principal Jewish and Christian Sites at Jerusalem.' We will give extracts from this book in a future issue. It is published in London, England, by Edward Stanford, 55 Charing Cross. Price, one shilling.

We have also received from the same author, a second edition of his pamphlet, 'Darkness in the Land of Egypt and Light in the Dwellings of the Children of Israel,' revised and enlarged. In a recent letter Colonel Fraser says, "I was able to test the reality of the natives of India being able to see at a distance. In a black substance given me, I saw enough myself to convince me that the phenomenon was genuine." With reference to this we quote from his pamphlet: "We never see the whole of an object. Sight is always from the blunt apex of a cone of converging rays. There is no substance whose composition is yet identified, which, from having the property of separating the parallel from the slant rays, would show objects of their natural size, though there is some approach to it in using a microscope. Suppose a diaphragm could be made which would transmit only the nearly, and the quite, parallel rays, then the features of surfaces at any distances would be visible. The use of a lens under such circumstances would replace in a small space for millions of

miles difference in remoteness, and the attendant range of vision is immensely great. Hence the problem said to have been solved practically in the east, of seeing at a distance, awaits its logical determination by the discovery of some 'medium impermeable to those inclined rays, on collecting which, at a focus, our present sight depends. But this is only one possible solution of distant seeing. . . . It has been suspected by Sir William Thompson that man has a magnetic sense. There is no reason for—just as a certain number of vibrations of the ethereal medium of light a second are a particular color—the differences of electric potential not being colors of an electric spectrum; and by means of this magnetic sense, we would most certainly see, by the potential of their surfaces, all natural objects with their distinctive electric colors independently of the laws of optics altogether, and as clear, if not as bright, as in optical daylight in the dark, and indifferently to intervening bodies being opaque or transparent. Throughout such an electrical prospect it would be difficult to admit the foreshortening of perspective; all there would be would be the power our minds have by physical effort, however, of selecting what we will look at in a landscape, distance would have slight effect, only to be perceived by the time and trouble of pursuit. Viewing objects by their potential is consequently a second mode of accounting for seeing at a distance.

'THE TRUE THEORY OF THE SUN,' showing the Common Origin of the Solar Spots and Corona, and of Atmospheric Storms and Cyclones. By THOS. BASSNETT, author of 'Outlines of a Mechanical Theory of Storms.' G. P. Putnam's Sons. New York: 27 and 29 West 23d street. London: 25 Henrietta street, Covent Garden.†

This is a book of 264 pages, illustrated by numerous maps and diagrams, and containing formulæ and tables for computing the maximum and minimum epochs of solar activity. We intended to publish copious extracts in this number of the magazine, but present instead a paper by the author. The book discusses the inception and early history of the theory of electric vortices; the ethereal medium—electricity the evidence of existence of such medium; the solar surface; the solar

corona; the solar spots and spot theories; the light and heat of the sun; cometary phenomena. The author argues that the physical universe is not menaced with final extinction; that the great ethereal ocean is an infinite reservoir of kinetic energy; that the relation of finite to infinity guarantees the perpetuity of a finite creation.

THE SECOND ADVENT. A Lecture in Verse. By J. H. Weldon. J. P., Ash Hill Towers, Kilmallock. Published in London by Robert Banks, Racquet Court. Price, sixpence.

In his prologue the author tells his audience that he has given his arguments in rhyme, because it is impressive and more terse, and an aid to the memory. He believes the Second Advent of Christ to be pre-millennial; he reviews the signs of the times, and considers that they portend a coming crisis. He points out the folly of those who strive to solve the mysteries of God by the faculties of man, and finally exhorts his hearers to be prepared for that second coming. The lecture is contained in a little pamphlet of 52 pages, and is exceedingly comprehensive in style.

THE HINDU ZODIAC, OR THE DISCOVERY OF THE LOST KEY. By N. Chidambaram Iyer, B. A., F. T. S., President-Founder of the Jotistantra Sabha, Trivadi, Tanjore District.

We are grateful to our brother member, Col. Frazer, of the British Army, in India, for sending us the following paper from a Hindu astronomer, and we doubt not that it will be read with great interest by all of our members. Col. Frazer says:

Forwarded to the INTERNATIONAL STANDARD for review, in the light of the passage: "*And when I shall put thee out; I will cover the heaven, and make the stars thereof dark.*" —Ez. xxxii, 7.

And he adds: "The Eastern nations are guided by the stars in a way we have a faint idea about."

We notice some very remarkable points in this paper. The author claims that he has the lost key which will enable the sacerdotal order of India to recover their lost power. He claims that the cause of the failure or frequent failure to predict accurately is on account of the loss of the position of the fixed first point of Aries. If this be true as to the Hindu

sacerdotal order, may it not also cause the entire cessation of prediction by all sacerdotal orders.* Certain it is that the astrologers of to-day have but partial success, and we have observed that they always calculate from the first point of Aries of 2,000 years ago. Our knowledge and belief in astrology began when we discovered that the picture of the Unveiling of Isis was astronomical, or astrological. The investigation of the time when the moon was at the foot of the constellation of Virgo—fitted to the historical date of September 9th, of 1774, 9 A. M.—showed that the position of the constellations must be taken naturally. It will be remembered that we had supposed that September 7th, 1774, was the time, but it would only fit to the 9th. Testing a noted astrologer subsequently, he insisted that the moon was at the foot of the constellation of Virgo on September 7th, 1774, then we found that he was calculating from one sign back which astrologers had adhered to for two thousand years.

Chidambarum Iyer challenges the western theosophists to a test of his key. I have sent him the birthday of General Garfield, which it will be remembered was fixed exactly at 2 A. M. of November 19th, 1831, at Solon, Ohio; also the birth of Liberty, September 9th, 1774, 9 A. M., or 4 P. M., at Milton or Boston, Mass., latitude of Harvard.

I would call attention also to the very remarkable statement of M. Iyer in relation to the 'Nadigranthams' of India, of which he says he knew of five sets—a Sanskrit work, seventy volumes of which are now in the possession of two persons in Southern India, containing, it is claimed, the lives of all men.

The main object of this paper is to announce to the world the discovery of the exact position of the fixed Hindu zodiac, or, in other words, of the exact distance of the real first point of Aries from the vernal equinox—one of the two points where the ecliptic cuts the equator. This distance is known to the Hindu astronomers as the Ayanamsam. Before coming to this important subject, I find it necessary to say a few words to show that the Hindu zodiac is fixed and not shifting in its position as was erroneously supposed

* Few people are aware that the prophet Daniel is the author of the most complete soli-lunar cycle ever known. See the discovery of the distinguished Swiss astronomer, M. de Cheseaux, in Grattan Guinier's "Approaching End of the Age." This cycle was called the Daniel cycle.

by Mr. T. Subba Row.* He confounds the shifting zodiac of the western astrologers with the fixed zodiac of the Hindus. At page 41 of the 'Theosophist' of November, 1881, Mr. Subba Row says: "The Hindus were acquainted with the precession of the equinoxes, as may be easily seen from their works on astronomy and from the almanacs published by the Hindu astronomers. Consequently they were fully aware of the fact that the constellations in the various zodiacal divisions were not fixed." It is true that the Hindus were aware of the precession of the equinoxes, which is stated to be at the rate of 54 seconds a year according to Suriyasidhanta; 60 seconds a year according to a work entitled *Grahalaghavam*, and 50 seconds a year according to the wonderful discovery of Varaha Mihira. But it is wrong to suppose that the Hindu zodiac commences at the vernal equinox, and that in the almanacs published by the Hindu astronomers the positions of the planets are referred to such equinoctial point. The planetary positions are all calculated with reference to the fixed first point of Aries, which is at present about 20 degrees to the east of the vernal equinox.

I. This can be easily ascertained by a reference to the calendars published by the Hindu astronomers. Take, for instance, the *Combaconum* almanac for the current year, *Chitrabhanu*. It will be found that while the sun enters the vernal equinox as early as at about 4 A. M. on the night of the eighth Meena, corresponding to twentieth March, 1883, it enters the sign Aries only so late as at 1 P. M. on the first Mesham next (vide next year's almanac) corresponding to the twelfth April, 1883. The position of the planets calculated from the fixed first point of Aries is known as the *Nirayanasphutam* of the planets; while the same calculated from the moving vernal equinox is known as the *Sayanasphutam* of the planets; in other words, the longitudes of the planets. That the former is the only *Sphutam* required both for the calculation of nativities, and for the observance of various religious rites, will be apparent from even a superficial perusal of any work on astronomy, astrology and *Dharma Shashtra* bearing on the subject. I shall quote a few authorities.

II. In chapter I. of the *Suriyasidhantam* we find "the sidereal revolution of a planet ends with the fixed star Revati" which marks the end of the sign Pisces, and the beginning of the sign Aries. From this it is apparent that the fixed zodiac of the Hindus commences from this star and ends with the same.

III. Again, in the same book, we find the positions of the 27 stars along the ecliptic given from the star Revati,† where, of course, the zodiac, each of whose signs contains 2 1/3 of these stellar divisions, commences.

		One star is 8° from the first point of Aries.			
Another	"	20	"	"	"
"	"	38	"	"	"
"	"	50	"	"	"
"	"	63	"	"	"
*	*	*	*	*	*
Revati	"	0	"	"	"

thus making a fixed star the first point of Aries.

* This assertion, however, does not in the least alter the main argument in the article alluded to, as the imaginary forms assigned to the constellations must necessarily be changing, on account of the variation in the position of the so-called 'fixed stars.' It yet remains to be seen whether *Sayanasphutam* or *Nirayanasphutam* is to be used in the Hindu astronomical and astrological calculations. If Mr. Chidanbharum Iyer succeeds in showing from the *Nadigranthams* that astrological calculations are correct only when *Nirayanasphutam* is used, then his statement that a fixed zodiac should be the basis of our calculations can be taken to be correct.

T. SUBBA ROW.

† At page 14 of William Lilly's introduction to Zadkiel's work on astrology we find the following: "The first sign Aries commences the zodiac, its beginning being that spot in the heavens where the sun is when crossing the equator in spring."

‡ The star intended is the faint star, Zeeta Piscium, of about the fifth magnitude, situated in the band which connects the two Fishes. It is, indeed, very near the ecliptic, having only 13' of south latitude. It coincided in longitude with the vernal equinox in the year 572 of our era.

IV. Again in chapter III of the Brihat Samhita of Varaha Mihira, we find the following :

" In the old Sastras we (Varahamihira) find that at one time the sun's southward march commenced when it reached the middle of the fixed star, and the . . . or the sun's northward march commenced immediately. It reached . . .

" Whereas, at present, the former commences at the beginning of sign Cancer and the latter at the beginning of sign Capricornus.

" If the sun should change his course (from south to north) before reaching . . . he brings on evil on the west and on the south ; if he should change his course (from north to south) before reaching . . . he brings on evil on the north and on the east."

Thus it will appear that the sun's turning points are not always the beginning of . . . and . . . —they may be beyond these and as now within these, which will not be the case if the first point of Aries be identical with the vernal equinox.

V. Again the author, after stating that the ceremony should be performed immediately after the commencement, says :

" At one time the sun's northward march commenced immediately it reached . . . and its southward course lay between the middle of . . . , and the end of . . . ; whereas at present the sun turns its course without reaching . . . and . . . "

VI. Again we find :

" The Sayana month is not a proper one for adoption ; "therefore the tithees that fall within the Nirayana months and no other are to be adopted."

More authorities can be cited to show that the Hindu first point of Aries and the vernal equinox are two distinct places apart from one another over 20° , and that the Hindu zodiac commences at the fixed star Revati.

Now I come to the main subject of this paper. It refers to the final settlement of the Ayanamsa question, so well known to the astronomical world. The question in its unsettled state continued to torment the scientific instinct of the western as well as the eastern astronomer for several centuries. On it depended the success of the eastern astrological literature, and which, in no small measure, explains the errors astrologers so invariably fall into in their predictions both on the subject of nativity and on horary astrology—the two main departments of the science. The question is also popularly known as the Meenamesham question. So little was this question solved that the term Meenamesham has come to mean doubt and uncertainty. From what I have written it will be evident that in the Hindu almanacs the position of the planets are referred to the fixed star Revati. Now, those that are interested in a healthy condition of the sciences of eastern astrology and astronomy, will be filled with dismay and disappointment when I inform them that the star Revati which was supposed to be in the ecliptic has now disappeared ! Where has it gone ? It has not improbably receded into the dark and unfathomable abyss of endless space either by some unaccountable freak on its own part, or, more probably, by a vast and sudden withdrawal of the solar system itself from the star. At one extremity, then, of the little bit of increasing space known as the Ayanamsa we have the star Revati, and at the other extremity we have the vernal equinox. As will be shown further on, a correct knowledge of the Ayanamsa plays no insignificant part in the preparation of Hindu almanacs. This then appears to be an appropriate place to say a few words regarding the precession of the equinoxes. The precession was known to the ancient Hindu astronomers long, long before the time of the Varaha Mihira.

1. Here we find the following readings regarding the precession of the equinoxes, which supposes that the vernal equinox oscillates on both sides of the star Revati 27° on each side.

"Anas therefore mean

"a the equinoctial point oscillates about the star Revati according to the several

(1)	30	$\times 20 = 600$	times.
(2)	30 ²	= 900	"
(3)		30	"

Without entering into the details of calculation, suffice it to say that the first reading gives the annual motion of the equinoctial point to be 54", the second gives it to be 81", and the third gives it to be 2.7".

II. According to another author we have the following :

"In one Kalpa, which consists of 4,320,000,000 years, the equinoctial point makes 199,699 circuits of the heavens." This gives 59" as the annual rate of motion of the equinoctial point.

III. Again an author says that the equinoctial point moves westwards at the rate of 60" a year.

IV. Lastly, Varāhamihira says that this point moves westwards at the rate of about 50" a year. Now Varāhamihira lived between 1,400 and 1,500 years ago. Modern western astronomers say that the rate of retrograde motion of the equinoctial point is subject to an annual increment of .00024". This in 1,400 years gives the increase as .34" So that the rate of about 50" as ascertained by Varāhamihira over 1,400 years ago should, at present, be 50.34"; whereas western discovery gives it as 50.26". The difference is, then, only 0.08". Now who will not bow in mute reverence to the wisdom and learning of this great astronomer who, with what rough instruments he could construct for the purpose, was able to achieve as much success in astronomical researches as the modern scientific men with all their valuable telescopes and sidereal clocks and with the records of past observations are able to do.

Now, to return again to the task on hand, I have already stated that this star Revati, which is of such immense importance to the Hindu astronomer and astrologer, has somehow disappeared. Are there no means of readily finding out its position? We shall try.

1. As already stated Varāhamihira says :

"In my time the sun changes his course at the first point of Cancer and at the first point of Capricornus."

In other words, the vernal equinox was at Revati in his time. Now we are not certain,

(1.) That the vernal equinox was exactly with the star, and not even a little to the east or a little to the west of the same.

(2.) We do not know the precise year when this line was written. An error of twelve years, for instance, will give an error of ten minutes in the Ayanamsa. It is, therefore, difficult to ascertain from the above what the exact Ayanamsa is at present.

II. Again, I have already quoted a passage to show the position of each of the twenty-seven stars along the ecliptic from the star Revati.

Now, as nearly all these stars, excepting Revati, are now known and can be identified, and as the exact position of the vernal equinox too is known, one might suppose that by subtracting from the actually observed distance of any of these stars, its given distance from Revati, the length of the Ayanamsa can be found out.

[NOTE.—The stanza quoted above gives the polar longitudes of the stars from Revati. Before subtracting these, as stated above, it is necessary to convert them into the ordinary longitudes for the year].

Unfortunately this method, which ought to be the best and most satisfactory, is found to fail, for the method ought to give us the same Ayanamsa, the longitudes of how many stars so ever are taken into account. This, however, is not the case. The reason for this appears to be that either from some defect of observation, or from some other cause, the several longitudes above given are only very rough ones.

III. Now Bentley, in his work on astronomy, devotes much attention to the Ayanamsa question. As stated in the previous paragraph, he first calculated the several ayan-

amsas resulting by taking into account the longitude of each of the twenty-seven stars, and then took the average length of these, which he considers to be nearest to the correct *ayanamsa*.

IV. As *Revati* is stated to be on the ecliptic, the translator has fixed his choice on a certain star in *Pisces*, known as the *Zeeta Piscium*, which he considers as the *Revati* of the *Hindus*. This star, however, is not in the ecliptic, but has a latitude of 10 minutes from it, and its longitude now is $18^{\circ} 14' 20''$.

V. Now placing implicit faith (a) in this discovery—as he was justified in doing so in the absence of any clue to the discovery of the lost star—Mr. Kero Lakshmana Chatrai, M. A., Mathematical Professor of the Deccan College, has been publishing for the last eighteen years an almanac with the help of the correct modern tables, according to which the *Ayanamsa* on the first of January, 1883, is $18^{\circ} 14' 20''$.

VI. Again the late Mr. C. Ragoonathachariar of the Madras Observatory, started a similar almanac* some thirteen years ago, in which he has taken the average length of the different *Ayanamsas* as adopted by several Hindu almanac publishers. This length is on the first of January, 1883, $22^{\circ} 2' 38''$.

VII. Brahma Sri Sundaresvara Srauti, and Bra-Sri Venkatesvara Deckshitar, the best living astronomers of Southern India, have also been publishing a similar almanac for the last seven years, and that for Southern India, under the auspices of Loca-Guru Sri Sankarachariar, of Combaconam. In this almanac they have adopted the average *ayanamsa* of the late Mr. C. Ragoonathachariar.

VIII. Again, Brahmī Sri Bapu Devasastrī of Benares, has also been publishing for several years an almanac on the same principle, in which we find the *Ayanamsa* on the first of January, 1883, to be $21^{\circ} 58' 29''$. He says† that he first calculated the *Ngrayanaphutam* of the planets, for a given time, after the method prescribed in such works as the '*Surya-Sidhanta*,' and also noted down the *Sayanaphutam*, calculated with the help of the correct modern tables, and that, by subtracting the former from the latter, he arrived at the correct *Ayanamsa*. This sounds reasonable enough; but our friend the Sastri cannot for one moment assert that the tables as given in '*Surya-Sidhanta*' can at all be relied on, as they have not been corrected as they ought to be, as will be shown further on.

IX. Almanacs still continue to be published by several persons after the *Vakya* and *Sidhanta* methods of calculation. According to the former the *ayanamsam* on the first of January, 1883, is $22^{\circ} 41' 44''$, and according to the latter it is $20^{\circ} 46' 15''$.

[NOTE.—According to the *Vakya* school, in the year 444 of the *Salivahana* era, the vernal equinox was at *Revati*, and the annual motion assigned to it was $60''$. According to the *Sidhanta* school the vernal equinox was at *Revati* in the year 3600 of the *Kali* era, and the annual motion assigned to it was $54''$.]

Now, to sum up these, we have the following lengths of the *Ayanamsa* on the first of January, 1883:

(1) Bombay	Almanac.....	$18^{\circ} 14' 20''$
(2) Madras	} "	$22^{\circ} 2' 39''$
(3) Combaconam		
(4) Benares	"	$21^{\circ} 58' 29''$

(a.) In a note of his to Mr. C. Ragoonathachariar, F. R. A. S., of Madras, Mr. Kero Lakshmana Chatrai writes nine years ago as follows: "The position of *Zeeta Piscium* is assumed to be the zero of the *zodiac*. Thus the longitude of *Zeeta Piscium* at any time shows the precession of the equinox or *ayanamsam*. For Shaker 1796, $180^{\circ} 7' -$ ". And in the table published by him (page 325, last line, columns 1 and 2), he calls the *Zeeta Piscium* of the western astronomers as the star *revati* of the *Hindus*.

* The publication is being continued by his son, Mr. C. Raghava-Chariar.

† Vide preface to his '*Punchangam*.'

(5) Vakya	"	.....22° 41' 44"
(6) Sidhanta	"	.....20° 46' 15"

Now, it is necessary to remark here that in the first four almanacs the Sayanasphutam is first calculated, and the Nirayanasphutam is deduced from it by subtracting the Ayanamsam therefrom. The tables on which the calculations are based are of course very correct; and not only the annual retrograde motion of the vernal equinox, but the annual increment in the rate of its motion is known; but as it is not known where the star Revati is, the entire body of Nirayanasphutam falls to the ground.

Again, although according to the Vakya and the Sidhanta methods of calculation the Nirayanasphutam of the planets is obtained independently of the Ayanamsa,* yet the tables in the form in which they are being now employed are, for want of certain corrections,† to be applied to them as required by eminent Hindu astronomers, at this distance of time very incorrect. Hence, also, the Nirayanasphutam given in these almanacs falls to the ground.

Now I shall proceed to state what the correct Ayanamsam was on the first of January, 1883.

It ranges between 20° 23' 8" and 20° 25' 22". By adopting the mean 20° 24' 15" the maximum amount of error will only be 1' 7" (a). Now the difference between this correct ayanamsa and the various ayanamsams above given will be seen from the following :

(1) Bombay.....	— 2° 9' 55"
(2) Madras.....	+ 1° 38' 24"
(3) Combaconum }	+ 1° 34' 14"
(4) Benares.....	+ 2° 17' 29"
(5) Vakya.....	+ 0° 22' 0"
(6) Sidhanta.....	

To express the same in other words: the Ayanamsam error, as it affects the planetary motions in point of time given in the first four almanacs, will be found to be as follows :

PLANETS.	Bombay (Before.)		Madras and Combaconum (After.)		Benares (After.)	
	d.	hr.	d.	hr.	d.	hr.
Sun.....	2	5	1	16	1	14
Moon.....	..	4	"	3	"	3
Mars.....	4	3	3	3	3	3
Mercury.....		13		10		9½
Jupiter.....	26		19	17	18	21
Venus.....	1	9	1			23
Saturn.....	64	16	48	23	46	20
Moon's Node.....	40	21	31		29	16

* The error in ayanamsa, however, affects (1) the rising and setting of the planets; (2) Their conjunctions. I may remark here that in the case of the other almanacs the calculations regarding these are very correct irrespective of the errors in the ayanamsa.

† He that incorrectly calculates is guilty of the sin of Brahmahayta, the murder of a Brahmin. Therefore it behoves the astronomer to note the daily culmination of a planet and ascertain its law of motion.

[Note.—This is as much as requiring the construction of an observatory.]-Ed.

[Note (a).—I am taking steps to reduce this to a minimum.

Now, while the above shows the only corrections to be applied to the four almanacs mentioned in the table, the corrections to be applied to the Vakya and Sidhanta almanacs cannot be so easily ascertained owing to the incorrect tables that are being employed in the calculation of the planetary motions.

This state of things sufficiently accounts in my opinion for the numerous failures in astrological predictions observable in modern times, and, if I may be allowed to speak the language of an orthodox Hindu, also for the fall—the ever accelerating fall—of the sacerdotal order from the eminence they at one time occupied in the pyramid of Hindu community. For the Sastras say that when an enjoined religious rite is either not observed or observed at an improper hour it brings on evil and misery.

"He who omits to perform Sraddha on the anniversary of the day of death, will be born a chandala a crore of times."

I shall proceed to dispose of the one question which now naturally engages the reader's attention, viz.: how did I discover the correct *ayanamsa*. I have discovered this by a process as sound and as satisfactory as any employed in the discovery of some of the sublimest truths in the world. I have only to ask the public to patiently hear and then judge.

Now this lands me on one of the gold coasts in the vast continent of Aryan literature. Very few of the modern Hindus—and fewer still of the so-called educated Hindus—are aware of the existence of what are called *Nadi Granthams*, which contain a faithful record of the lives of—to the utter amazement of the public I declare emphatically—*all men*—all men that ever lived, all men that are living, and all men that will come into existence! Smile not, reader, in derision of what might appear to you at first sight to be the man in the moon. Is it possible, one might ask, that such a work can exist—a work which can hardly afford space for the *names* of all mankind? The Indian census was taken—thousands of hands were at work in taking it, in tabulating its results, and it took over two years; and what was the information the voluminous records could supply us regarding each man? It is simply this: his age, caste, religion, profession and, I grant freely, in addition, whether he was married or single, and yet the work referred only to a particular time and to a particular country. Can, then, *Nadi granthams* exist? I reply emphatically that such a work (1) can exist and (2) does exist. A fact puts down a thousand texts. I know from personal experience of the existence of five *nadi granthams*, and I have heard of five more works. Of those that I have seen, a Sanskrit work—about seventy volumes of which are now in the possession of two persons in southern India—by Sathyachariar, the celebrated Hindu astronomer, is the best. I have taken my life from it, and the lives of many friends, both young and old and of different districts, have been similarly obtained.

As my paper has already become too long, I do not, on the present occasion, wish to explain on what principle the *Nadi granthams* have been prepared. Let me therefore hasten to close my article.

From what I have stated already, it will be clear at once that the different *ayanamsams* adopted by several publishers of almanacs cannot *each* be correct. If any one of them is considered to be the correct one, it is for the publisher who adopts it to prove satisfactorily its correctness. I have no doubt that Mr. Kero Lakshmana Chhatre and Brahma Sri Babu Deva Sastri will frankly own that they have no means of proving satisfactorily

* As the workings of the mighty current of life sweeping throughout our planetary chain have been thoroughly examined by the ancient adepts, and as the number of the planetary rounds, the various races and sub-races of humanity on each planet, and the number of incarnations of every spiritual monad floating along the current of life, were long ago ascertained with mathematical precision, as already indicated in the *Fragments of Occult Truth*, it would not be beyond human power to bring into existence a book giving all the particulars which a *Nadi grantham* is stated to furnish.—E.S.

the correctness of their *ayanamsam*. As for the other two gentlemen, I can't suppose for a moment that they consider their *ayanamsam* as resting on a satisfactory basis.

Now, I have to remark here

(1) That the *Dhruva Nadi* contains a correct record of the lives of men.

(2) That it gives the *nirayanasphutam* of all the planets at the moment of birth of each individual.

Now, as a horoscope constructed with the help of the correct modern tables contains the only error already pointed out, viz.: that resulting from an incorrect *ayanamsam*, and no other, my attempt to find out my life in the said *dhruva nadi* led me to a portion of the work which contained the lives of five or six persons, of which mine was one. I went carefully over all of them, and with little or no difficulty found out mine. I found the *Nirayanasphutam* of all the planets at the moment of my birth given in it; and as the *sayanasphutam* of the same had been calculated correctly with the help of modern tables, by subtracting the former *sphutam* of the sun from its latter *sphutam* I arrived at a certain *ayanamsam*; and what was my surprise when I discovered that the *ayanamsam* thus obtained from the two *sphutams* of the moon, Mars, Mercury, Jupiter, Venus, Saturn, and the moon's nodes was identically the same! This led me to suspect that this must be the correct *ayanamsam*. This suspicion was confirmed when I beforehand calculated with the help of this *ayanamsam* and of the correct modern tables the *nirayana-sphutam* of the planets in several cases, and found out on opening the *Dhruva Nadi* that the same *sphutams* were given in it! To crown all, the lives recorded in the *nadi* were found to be correct to even the minutest details.

All this, then, points to a period in the annals of India's greatness when *Jyotisha Sastra* (astronomy and astrology) was cultivated to a degree of perfection. What a change do we see now! The science thrived well in the Indian soil, under the warm sunshine of the Indian rulers; it began to lose its luxuriance under the cold, piercing blast of Afghan invaders; and its ruin is now being completed under the colder blast of our Anglo-Saxon rulers; and what is most to be deplored is that this ruin is being brought about through India's own children!

Bode's discovery of the law of planetary distances, though empirical in its nature, was accepted because, on application, it proved to be correct. I crave of the astronomers of the west and the east, for a similar indulgence to my discovery of the *ayanamsam*, whose correctness may easily be tested. I think the indulgence ought to be granted the more readily, seeing that so many vain attempts have been made by astronomers for several centuries to arrive at anything like a satisfactory solution of one of the most important problems of the science, viz.: the discovery of the correct *ayanamsam*; lo! the key was after all found stuck to the side of the box itself!

TRIPPLICANE, January 23, 1883.

P. S.—I showed my paper to Brahma Sree Sundareswara Srouthy, who is equally versed in the eastern and western systems of astronomy, and who was assisting the late Mr. C. Ragoonathachariar for four years. He admitted (1) the necessity that existed for the discovery of the correct *ayanamsam*; (2) the incorrectness of the *ayanamsam* adopted by the several almanac publishers, and (3) the probability of the *ayanamsam* discovered by me being the correct one.*

He further remarked that in Southern India, at least, no almanac publisher would now boldly introduce the correct *ayanamsam* in the almanac, owing to the difficulty of over-

* I may here add that Sundareswara Srouthy was himself of great help to me in the discovery of the correct *ayanamsam*.

Editor's Note.—A few of our European brother theosophists are invited to test the assertion of our Brother Chidambaram Iyer, by furnishing to him the necessary information from their horoscopes.

coming the prejudices of the people ; for the correction would first be felt in the case of the sun, as it will affect the Samkramana Punyakala.

As the present rulers of British India will take no interest in the matter, several of my friends are of opinion that the work should be undertaken by the enlightened native princes. In this view I perfectly concur ; for here is what Bhagavan Garga says on the subject :

(1) As the night is without a lamp, and the sky without the sun, so is a prince without an astronomer, and he gropes his way in the dark.

(2) If there should be no astronomer, the Muhoorthas, the Thithees, the Nakshatras, the ruthoos, the ayanas and the like will go wrong. It therefore behooves a prince to find out a learned astronomer.

(3) He that loves victory, fame, wealth, enjoyment and renown, ought not to live in a country devoid of a good astronomer.

(4) He that knows the hora, the ganitha and the samhitha sastras deserves to be supported by the prince who loves victory.

(5) That service which an astronomer can render to a prince cannot be effected by thousand elephants and by four thousand horses.

(6) That good which an astronomer can do to a prince will not be done to him by his father, mother, relations and friends.

Therefore their highnesses, the Maha Rajas of Travancore and Mysore, for instance, will do well to convene meetings for the purpose of ascertaining the correct ayanamsa, and of testing the correctness of my discovery. They will confer an invaluable benefit on the country by directing their court astronomers and almanac publishers to introduce the ayanamsa correction in their almanacs. This will pave the way for the eventual adoption of the correction in the almanacs published in British India.

In connection with this subject I need hardly impress on the mind of these and other native princes of India the importance of having an observatory in the capital of each prince and presided over by native astronomers learned in the systems of eastern and western astronomy and in the Dhurmasastras, and trained in the Madras Observatory.

THE HINDU ZODIAC.

In the November, 1881, issue of the 'Theosophist,' Mr. Subba Row stated that the zodiac of the Hindus was not fixed owing to the precession of the equinoxes, "as may be easily seen from their works on astronomy and from the almanacs published by the Hindu astronomers." That these works and publications did not support Mr. Subba Row's statements was clearly proved by me. If Mr. Subba Row wants more proofs, I shall give him a score more.

Mr. Subba Row now says that only if I succeed in showing (this, of course, I can do at any time, because I know where the books are to be found) "from the Nadigrandhams that astrological calculations are correct only when Nirayana Sphutam is used, then his (my) statement that a fixed zodiac should be (and not is?) the basis of our calculations can be taken to be correct." This is curious. Independently of the correctness of nadi-grandhams, the question was, not as Mr. Subba Row now says, whether Nirayana Sphutam is preferable to Sayana Sphutam (this is another question altogether), but whether Hindu astronomers and astrologers adopted and are still adopting the former as I stated, or the latter as Mr. Subba Row thought.

Besides, I should like to know whether Mr. Subba Row means to state that Sayana calculations give, in his experience, more correct results.

I never meant to deny the esoteric meanings he attaches to the names of the zodiacal signs. Here Mr. Subba Row is in his element, and it is a question with which I have nothing to do.

Yours obediently,

MYLAPORE, April 5, 1883.

N. CHIDAMBARAM IYER, F. T. S.

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NOTES.

Professor C. Piazzì Smyth writes that he is bringing out a pamphlet for an Australian, entitled "Why we do not Adopt the French Metric System." The "why" is founded largely on Pyramid teaching, and the "we" are Anglo-Saxons everywhere. At the end of the pamphlet he is introducing an appendix of eight pages, descriptive of "The International Institute for Preserving and Perfecting Weights and Measures," its labors, publications and membership. We sincerely thank Professor Smyth for this addition to his many acts of kindness.

We have received from Mr. George Kellogg a copy of *The Students' Journal*, a phonographic paper published by Andrew Graham, 744 Broadway, New York, containing an admirable article on Anglo-Saxon weights and measures.

As the Magazine is closing we have received from Mr. J. N. Wing, secretary of the New York and New Jersey branch of

the International Institute, a copy of the *American Druggist*, containing an editorial upon the recent paper of Professor Oscar Oldberg in the *Pharmacist*. We consider this of such importance that we hold the Magazine to present both the article of Professor Oldberg and the editorial upon it to our members, and beg them to give it as wide a circulation as possible in the newspapers of their towns.

The paper by Professor Oldberg on page 222, is unquestionably the most important contribution to the literature of the metric system that has appeared for a long time in this country. The facts referred to, the position held by the writer and his reputation as the most earnest advocate, heretofore, for the introduction of this system of weights and measures into practical pharmacy, cannot fail to put a stop, for some time at least, to any further increase in the employment of this system outside of laboratory work.

We venture to predict, also, that Professor Oldberg makes so good an argument for the relative perfection of the system now generally in use in the United States, that no one will take the trouble to modify it even so slightly as he suggests, to make it conform in any way to metric standards. The general opinion will be that the variation would, for all general purposes, be so slight that it will be better to let well enough alone than to run the risk of confusion.

When this journal was changed from a quarterly to a monthly issue in January, 1876, we announced our intention to express quantities, as far as practicable, in the terms of the metric system, and we have since, on numerous occasions, published extended tables and comments which were calculated to aid the comparison of one system of measurement with the other. After ten years of hopeful effort toward the introduction of the metric system, we fail to appreciate any decided increase of feeling in its favor among our readers, and it becomes a question of some importance whether, for most purposes, the end will justify the trouble, or, to use an old saying, "whether the game is worth the candle." Within the ten years past "metric bureaus" have been established and gone out of existence. Societies have resolved to adopt the metric system and still continue to use the one left to us by our fathers; hundreds of papers and discussions have been published, and a few physicians have taken the trouble to learn the posology of their remedies so that they could use the metric system with some facility. Not one medical school in the country has taught the metric doses of medicine in a manner to render students as familiar with them as they are with the ones generally used; and, on the other hand, the liability to mistakes resulting from the use of the system when the prescriber and dispenser were not equally familiar with the metric notation, has had several lamentable illustrations.

As an example of the practical working of many efforts to render the metric system popular among physicians, we will mention the experience of the largest county medical society in the United States. Largely through the influence of one of its members, a committee of three was appointed to report upon the subject, and in time the result of its labor appeared at length and in various forms. An investigation of the *personel* of the committee showed that its prime mover and chairman was not actively engaged in practice, and rarely had occasion to write a prescription. Another member, upon being questioned with regard to his own practice in using the system, said he did use it occasionally, but not often; and the third, while advocating its use by others, never used it himself.

We shall feel reasonably sure that the great majority of our readers will not be grieved if, in the future, we express quantities in grains, drachms and ounces, and we shall not

consider it desirable to devote much space to advocating the system proposed by Professor Oldberg, until the sentiment in favor of a drachm of sixty-two grains, etc., has become pretty general.

THE METRIC SYSTEM AND OUR APOTHECARIES' WEIGHTS AND MEASURES.

The writer has for several years been an earnest advocate of the adoption of the metric system in this country for medical and pharmacal purposes. Upon closer study, however, of the special requirements of medicine and pharmacy as to weights and measures, I am led to believe that the decimal system does not fulfill these requirements. The question as to what system of weights and measures we shall use in medicine and pharmacy is one of such great importance that the facts herein presented ought to receive earnest consideration.

Believing that my past activity in attempting to further the introduction of the metric system in the practice of medicine and pharmacy in the United States is somewhat generally known, and in view of the fact that my efforts in this direction have for several years been the subject of warm praise from some, and equally unstinted condemnation from others, I deem it proper to publish briefly the reasons which have impelled me to reverse my opinions. I have not arrived hastily at these conclusions, and I have to frankly acknowledge that my former position on this question was possible only from my then insufficient knowledge of some of its important but not so obvious bearings.

In order to construct a practical system of weights and measures for the purpose of the physician and pharmacist, it would seem to be of the highest importance to determine what would be the most suitable and convenient smallest unit of fluid measure. The fact cannot be ignored that fluid measures are necessary in the administration of liquid remedies, and that, therefore, consistency demands the use of fluid measures also in prescribing, dispensing and preparing medicines. The *drop*, no matter how variable in size it may be shown or admitted to be, still remains a convenient and familiar object by which to not only fix in the mind an approximate quantity but to actually measure doses. Any quantity less than a drop would clearly be an impracticable unit; whilst the *minim* has by long experience been found a most useful unit, *solely because of its nearness to the average drop of most liquids*. The metric system has no unit of fluid measure less than the cubic centimeter, which is equal to 16.231 minims, and therefore much too large. Fractional parts should be avoided as much as possible, and hence a minim is none too small.

The next step is to fix upon a weight unit which shall be commensurable with our smallest unit of fluid measure. The nearer approach then to a drop of water would be about one grain. The metric system has nothing to offer but the decigramme, equal to about one and one-half grain.

For fixing the strength of medicinal preparations, especially liquids, and for the easy subdivisions of doses, it is most convenient to have units of weight and measure which shall be not only parallel and commensurable, but also capable of several progressive subdivisions by two into smaller units without fractions until the number *one* is reached. The metric system has several parallel and very nearly commensurable units of weights and measures—the liter and kilogramme, the deciliter and hektogramme, the cubic centimeter and gramme, etc. but, being a decimal system, its units are divisible by two into the next lower units only once without striking fractions. Our American apothecaries' weights and measures are in this respect preferable to the metric system, and if so modified as to render the several units (already parallel) commensurable, our ounces, drachms and grains, and fluid-ounces, fluidrachms and minims would give us a very satisfactory system. This might be done by making our troy ounce exactly equal to the weight of one fluidounce of water at the most common-room temperature—that temperature at

which we ordinarily do our work in our laboratories and drug stores—our drachm exactly equal to a weight of a fluidrachm, and the grain equal to the weight of a minim of water at the same temperature. If, in addition, we should change the subdivision of the drachm and fluidrachm so that one drachm shall be sixty-four instead of sixty grains, and a fluidrachm sixty-four instead of sixty minims, this system would be perfect. We would then have:

1 U. S. Apothecaries' Ounce	= 1 U. S. Apothecaries' Fluidounce.
1 U. S. Apothecaries' Drachm	= 1 U. S. Apothecaries' Fluidrachm.
1 U. S. Apothecaries' Grain	= 1 U. S. Apothecaries' Minim.
Also 64 Grains	= 1 Drachm.
8 Drachms	= 1 Ounce.
And 64 Minims	= 1 Fluidrachm.
8 Fluidrachms	= 1 Fluidounce.

The ounces would be divisible into halves, quarters and eighths, expressed in drachms without fractions, and into sixteenths, thirty-seconds, sixty-fourths, etc., expressed in grains or minims without fractions; and the drachms would be divisible into halves, quarters, eighths, sixteenths, thirty-seconds and sixty-fourths, expressed in whole grains or minims.

In the metric system we find it inconvenient to write for any of the subordinate units. The gramme and the cubic centimeter are universally used. Hence fractions are unavoidable. Of late it has been shown that the use of the decimal point is fraught with danger to human life, which certainly ought not in any way or degree be dependent upon a frequently misplaced, misinterpreted, omitted, duplicated or illegible dot.

Whilst we have assumed that the gramme and cubic centimeter are commensurable, it is to be remembered that a cubic centimeter of water weighs one gramme only when at the unusual temperature of $+4^{\circ}$ C. and *in vacuo*, and that unfortunately the kilogramme of the archives is too light by about nine grains, so that in reality a liter of water at 22° C., which I assume to be the mean temperature of our work-rooms, is not 1,000 Gms., but only about 997.4 Gms.

The value of our fluidounce should be first fixed. It might be made exactly equal to 32 cubic centimeters, in order to provide at once a convenient and simple connection between the metric system and our apothecaries' weights and measures without materially altering the present value of the fluidounce.

If we assume that the wine gallon is 231 cubic inches, then our present United States fluidounce is equal to 29.573 cubic centimeters. To increase it to 32 cubic centimeters would be to make it about $\frac{1}{10}$ larger than it now is. Inasmuch as the fluidounce is a unit referred to almost exclusively for stating the quantities of diluents and menstrua, this change would surely not be a serious one. If we should then make our apothecaries' ounce the exact equivalent of the weight of one such fluidounce of pure water at 22° C., weighed in air, this would be equal to 31.91 Gms., instead of 31.1035 Gms., which it now is. This would amount to a difference of about $2\frac{1}{2}$ grains for every 100 grains, or about $2\frac{1}{2}$ per cent.; or in other words, the present troy ounce would be $\frac{1}{16}$ smaller than the new ounce.

Next, we could divide the new fluidounce and the new ounce into eight fluidrachms and eight drachms, respectively, the difference between the old and new drachms and fluidrachms being, of course, proportionately the same as between the old and new ounces.

Finally, the new fluidrachm might be divided into 64 new minims, and the new drachm into 64 new grains. The new minim would then be exactly $\frac{1}{16}$ cubic centimeter, or about $\frac{1}{16}$ larger than our present minim; and the new grain would be only 2.46 milligrammes, (or about) $\frac{1}{16}$ smaller than our troy grain.

A new fluidounce equal to 32 cubic centimeters, and a new ounce of 32 Gms., would not be as desirable as a fluidounce weighing exactly one ounce when referring to water at

22° C. (71.6° F.), as 32 cubic centimeters of water does not weigh 32 Gms. either at +4° C. or at +22° C.

In my little manual of 'Weights, Measures and Specific Gravity,' just published, these data will be found more fully commented upon. On pages 45 and 46 of the manual referred to, the exact difference between the several corresponding old and new units is stated, and on page 36 it is suggested that if these reciprocal relations between our unit of weight and measure should be established, our old grain weights and fluid measure graduates could still continue to be used until gradually replaced by new ones without the slightest confusion or disadvantage. The difference between the new ounce and the troy ounce would be less than 13 grains; between the new drachm and the old drachm about 1½ grains; between the old grain and the new grain the difference would be as if 26 grains had been taken instead of 27. As to the fluid measures, the differences between the old and new fluidounce would be less than 40 minims; between the old and new fluidrachm less than 5 minims; and between the old and new minim the difference would be as if 40 minims should be taken instead of 41. Yet, with these trifling modifications in the accepted values of our units of weight and fluid measure, we could at once insure: 1. Parallel units; 2. Commensurability; 3. Divisibility of the larger units into halves, quarters, eighths, sixteenths, etc., expressed in whole numbers of the lower units, and thus the avoidance of fractions to the greatest possible extent.

Even if our present apothecaries' weights and measures should remain unchanged, they are to be preferred to the metric system, because they are so nearly what they ought to be that it would seem to be a grave error to discard them in favor of a system which has been found to be so hazardous by reason of its unavoidable decimal fractions and decimal point.

In the absence, however, of any fixed legal standards for the United States, why should we continue to use the troy ounce with the peculiar (apothecaries') subdivisions adopted by the London and Edinburgh colleges, and their special apothecaries' fluid measures (all of which we inherited from England in colonial times, and which have since been abolished in Great Britain), without either legalizing them, fixing the values of their units, or modifying them so as to serve their special uses as perfectly as possible, especially as those weights and measures are used by no one but physicians and pharmacists?

A new, complete and harmonious system of weights and measures for this country such as would merit permanent adoption, would, of course, be preferable; but in view of the prevailing diversity and confusion, it may be considered sufficient to remodel the special weights and measures used in medicine and pharmacy independently of those used in general commerce.

The plan here suggested is not the only one which seems practicable; but if we would have the weights and measures of pharmacy bear simple relations to the weights and measures of modern science, the methods open to us are to either make our fluidounce exactly 32 cubic centimeters and to make the troy ounce equal to the weight of the fluidounce of water at whatever may be deemed the most suitable standard temperature, or to make an apothecaries' ounce of such size that 32 of them shall correspond to the weight of a liter of water at 22° C. One liter of pure water at 22° C. weighs 32.067 of our present apothecaries' ounces, and the size of the ounce might be slightly increased so that only 32 ounces (instead of 32.067) shall represent the liter. Then the fluidounce could be made to represent the volume of one ounce of water at 22° C. The first-named plan is preferable.

Either of these plans would connect our weights and measures with the metric system and its primary basis. If we were to attempt the construction of an entirely new system from beginning to end, based upon either the seconds pendulum or the quadrant of the earth, ignoring all weights and measures at this time in use, the task would probably be accomplished in vain, if at all.—*Prof. Oscar Oldberg, in The Pharmacist.*

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